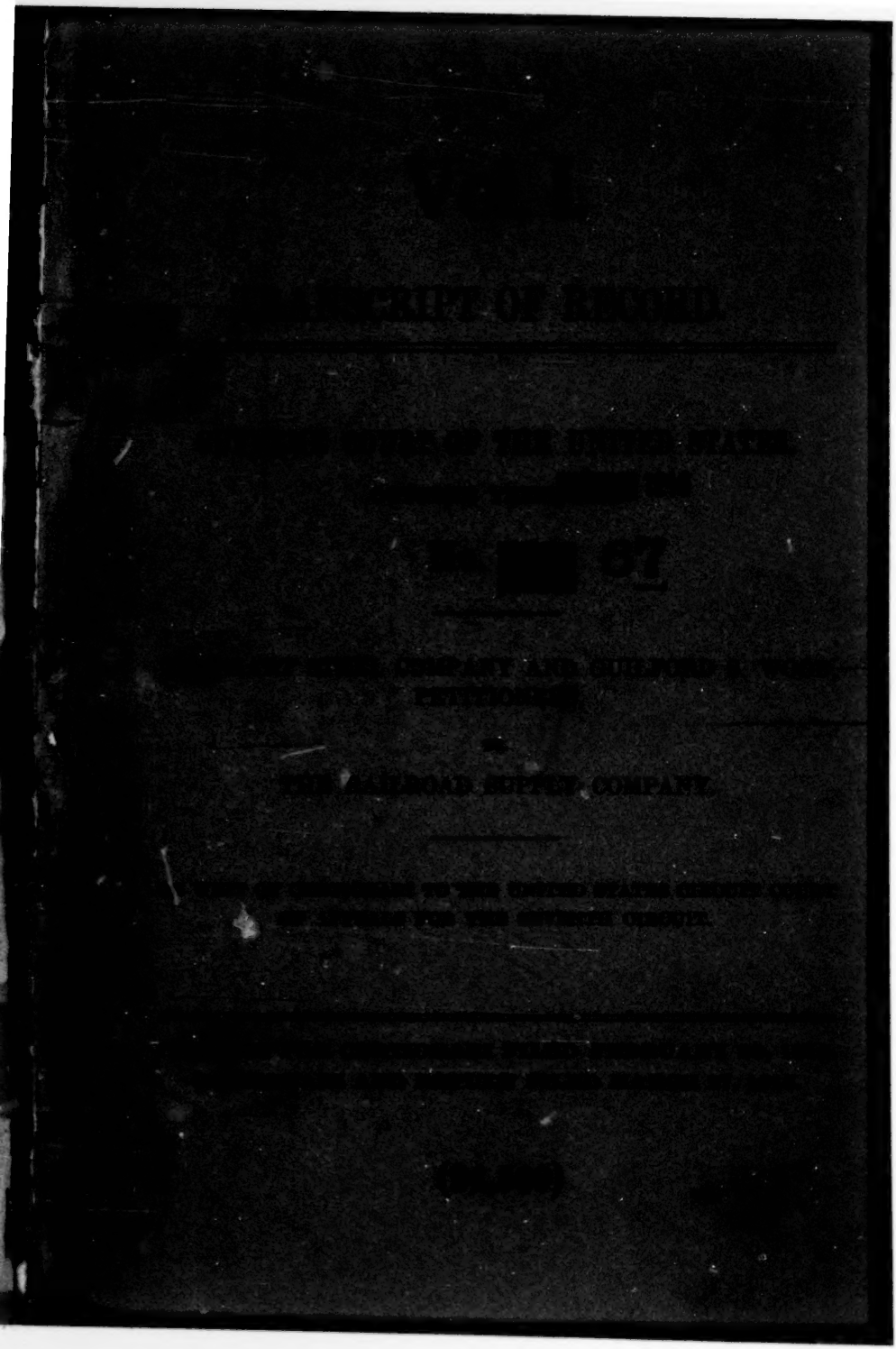

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(24,569)

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1915.

No. 357.

THE HART STEEL COMPANY AND GUILFORD S. WOOD, PETITIONERS,

vs.

THE RAILROAD SUPPLY COMPANY.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT.

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a VOL. 1.

Transcript of Record.

In the United States Circuit Court of Appeals for the Seventh Circuit, October Term, A. D. 1911.

No. 1886.

THE RAILROAD SUPPLY COMPANY, Appellant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Appellees.

Mr. Taylor E. Brown, Mr. C. C. Linthicum, Mr. C. Clarence Poole, Counsel for Appellant.
Mr. Frank F. Reed, Mr. Edward S. Rogers, Mr. Frederick P. Fish, Counsel for Appellees.

Appeal from the Circuit Court of the United States for the Northern District of Illinois, Eastern Division.

Transcript of record filed Jan. 10, 1912.

Printed record filed Feb. 20, 1912. Edward M. Holloway, Clerk.

b In the United States Circuit Court of Appeals for the Seventh Circuit, October Term, A. D. 1911.

No. 1886.

THE RAILROAD SUPPLY COMPANY, Appellant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Appellees.

Mr. Taylor E. Brown, Mr. C. C. Linthicum, Mr. C. Clarence Poole, Counsel for Appellant.
Mr. Frank F. Reed, Mr. Edward S. Rogers, Mr. Frederick P. Fish, Counsel for Appellees.

Appeal from the Circuit Court of the United States for the Northern District of Illinois, Eastern Division.

1 & 2 *Placita.*

Pleas in the Circuit Court of the United States for the Northern District of Illinois, Eastern Division, in Chancery sitting at the United States Court room, in the City of Chicago, in said District and Division, before the Hon. Christian C. Kohlsaat, Circuit Judge of the United States for the Seventh Judicial Circuit, on Thursday, the twenty-eighth day of December, being one of the days of the regular December term of said Court begun Monday, the eighteenth day of December, in the year of our Lord, one thousand nine hundred and eleven and of our Independence the one hundred and thirty-sixth year.

Present: The Hon. Christian C. Kohlsaat, Judge of said Court, Presiding; Luman T. Hoy, United States Marshal for said District, and John H. R. Jamar, Clerk.

3 In the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois.

Bill of Complaint.

To the Honorable the Judges of the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois, in Chancery Sitting:

The Railroad Supply Company, a corporation of the State of Illinois, having its principal place of business in the City of Chicago, in said State of Illinois, brings this, its bill of complaint, against The Hart Steel Company which (as your orator is informed and so charges the fact to be) is a corporation of the State of New York, having an office and an established place of business in and doing business in the City of Chicago, County of Cook, and State of Illinois, in said Northern District of Illinois, and against Guilford S. Wood, manager and agent of said The Hart Steel Company, a resident of the City of Chicago, in the County of Cook, and State of Illinois, and an inhabitant of the said Northern District of Illinois, and thereupon your orator complains and says:

I. That your orator, The Railroad Supply Company, is a corporation duly organized and existing under and by virtue of the laws of the State of Illinois; and that it is engaged in the business of manufacturing and selling tie-plates and has its principal place of business located in the City of Chicago, in the said State of Illinois.

4 II. Your orator further says on information and belief, and so states the fact to be, that The Hart Steel Company is a corporation organized and existing under and by virtue of the laws of the State of New York; that it is a citizen of New York and an inhabitant of the Southern District of New York; that it is engaged in the business of selling tie-plates and that it has a regular and established office and place of business at No. 77 Jackson boulevard, in said City of Chicago, in said Northern District of Illinois.

III. Your orator further says that the said Guilford S. Wood is the manager and agent of the defendant corporation, The Hart Steel Company, is in charge of its aforesaid office and place of business, in the said City of Chicago, and is an inhabitant of the said Northern District of Illinois, and is actively engaged in and about the business of said The Hart Steel Company, and of the wrongful acts hereinafter complained of.

IV. Your orator further shows unto your Honors that prior to March 13, 1895, one Benjamin Wolhaupter, was the original, first and sole inventor of certain new and useful improvements in tie-plates (which were fully described in the application for letters-patent, filed March 13, 1895, hereinafter mentioned), which invention had not been known or used by others in this country before said Benjamin Wolhaupter's invention or discovery thereof; had not been patented or described in any printed publication in this or any foreign country before said Benjamin Wolhaupter's said invention or discovery thereof, or for more than two (2) years prior to his application for patent thereon, hereinafter mentioned; which was not, before said Benjamin Wolhaupter's application for patent thereon, in public use or on sale in this country for more than two (2) years and which had not been abandoned.

5 V. And your orator further shows unto your Honors that the said Benjamin Wolhaupter, so being the original, first and sole inventor and discoverer of said improvements in tie-plates made due application in the United States Patent Office for letters-patent for said invention (which application was filed thereon March 13, 1895) and, upon due proceedings had and having complied with all the requirements of the law in such case made and provided did obtain and there was issued and delivered to said Benjamin Wolhaupter letters-patent of the United States for said invention, in due form of law, under the seal of the Patent Office of the United States signed by the Secretary of the Interior and countersigned by the Commissioner of Patents of the United States, bearing date of May 7, 1895, and number 538,809, whereby there was granted and secured unto the said Benjamin Wolhaupter, his heirs and assigns, or intended so to be, for the term of seventeen (17) years from and after the date of said letters-patent, the full and exclusive right of making, constructing, using and vending to others to be used the said invention and improvements as set forth in said letters-patent, a true and correct copy of which is hereto attached and marked "Exhibit A" and by virtue thereof the said Benjamin Wolhaupter became and was the sole owner of all rights and privileges granted and secured, or intended to be granted and secured, in and by said letters-patent.

VI. Your orator further shows unto your Honors that thereafter the said Benjamin Wolhaupter for a good and valuable consideration did sell, assign and transfer unto David S. Wegg, of Chicago, Illinois, the entire right, title and interest in and to said letters-patent No. 538,809, and said invention; that thereafter said David S. Wegg, for a good and valuable consideration, did sell, assign and

transfer unto the Q. & W. Company, a corporation of the
6 State of Illinois, the entire right, title and interest in and to said letters-patent and said invention and that thereafter the said Q. & W. Company, for a good and valuable consideration, did sell, assign and transfer unto your orator, the said The Railroad Supply Company, the entire right, title and interest in and to said letters-patent and invention, whereby your orator, said The Railroad Supply Company, became and now is the sole and exclusive owner of said letters-patent No. 538,809 and the said invention; and that each of said assignments, sales and transfers above mentioned was duly evidenced by an instrument in writing, each of which was duly recorded in the United States Patent Office as by said original instrument or duly authenticated copies thereof in court to be produced will more fully appear.

VII. Your orator further shows unto your Honors that prior to May 3, 1897, the said Benjamin Wolhaupter, was also the original, first and sole inventor of certain new and useful improvements in tie-plates (which were fully described in the application for letters-patent, filed May 3, 1897, hereinafter mentioned) which invention had not been known or used by others in this country before said Benjamin Wolhaupter's invention or discovery thereof; had not been patented or described in any printed publication in this or any foreign country before said Benjamin Wolhaupter's said invention or discovery thereof, or for more than two years prior to his application for patent thereon, hereinafter mentioned; which was not, before said Benjamin Wolhaupter's application for patent thereon, in public use or on sale in this country for more than two (2) years and which had not been abandoned.

VIII. And your orator further shows unto your Honors that the said Benjamin Wolhaupter, so being the original, first and sole inventor and discoverer of said improvements in tie-plates made
7 due application in the United States Patent Office for letters-patent for said invention (which application was filed thereon May 3, 1897) and, upon due proceedings had and having complied with all the requirements of the law in such case made and provided did obtain and there was issued and delivered to said Benjamin Wolhaupter, letters-patent of the United States for said invention, in due form of law, under the seal of the Patent Office of the United States, signed by the Secretary of the Interior and countersigned by the Commissioner of Patents of the United States, bearing date of January 14, 1902, and No. 691,332, whereby there was granted and secured unto the said Benjamin Wolhaupter, his heirs and assigns, or intended so to be, for the term of seventeen (17) years from and after the date of said letters-patent, the full and exclusive right of making, constructing, using and vending to others to be used the said invention and improvements as set forth in said letters-patent, a true and correct copy of which is hereto attached and marked "Exhibit B" and by virtue thereof the said Benjamin Wolhaupter became and was the sole owner of all rights and privileges granted and secured, or intended to be granted and secured in and by said letters-patent.

IX. Your orator further shows unto your Honors that thereafter
e said Benjamin Wolhaupter for a good and valuable consider-
ion did sell, assign and transfer unto David S. Wegg, of Chicago,
linois, the entire right, title and interest in and to said letters-
atent No. 691,332, and said invention; that thereafter said David S.
Vegg for a good and valuable consideration did sell, assign and
ansfer unto the Q. & W. Company, a corporation of the State of
linois, the entire right, title and interest in and to said letters-
patent and said invention and that thereafter the said Q. &
W. Company, for a good and valuable consideration, did sell,
assign and transfer unto your orator, the said The Railroad
upply Company, the entire right, title and interest in and to said
etters-patent and invention, whereby your orator, said The Rail-
oad Supply Company, became and now is the sole and exclusive
wner of said letters-patent No. 691,332, and the said invention;
nd that each of said assignments, sales or transfers above men-
ioned was duly evidenced by an instrument in writing, each of
vhich was duly recorded in the United States Patent Office as by
aid original instruments or duly authenticated copies thereof in
ourt to be produced will more fully appear.

X. And your orator further shows unto your Honors that prior
o March 31, 1902, the said Benjamin Wolhaupter, was also the
riginal, sole and first inventor of certain new and useful improve-
nents in tie-plates (which were fully described in the application
or letters-patent filed March 31, 1902, hereinafter mentioned),
vhich invention had not been known or used by others in this coun-
ry before said Benjamin Wolhaupter's invention or discovery
hereof; had not been patented or described in any printed publica-
ion in this or any foreign country before said Benjamin Wolhaup-
er's invention or discovery thereof, or for more than two (2) years
prior to his application for patent thereon, hereinafter mentioned;
which was not, before said Benjamin Wolhaupter's application for
patent thereon, in public use or on sale in this country for more than
two years and which had not been abandoned to the public.

XI. And your orator further shows unto your Honors that the
said Benjamin Wolhaupter, so being the original, first and sole in-
ventor and discoverer of said improvements in tie-plates, made due
application in the United States Patent Office for letters-patent for
said invention (which application was filed thereon March
9 31, 1902) and, upon due proceedings had and having com-
plied with all the requirements of the law in such case made
and provided, did obtain and there was issued and delivered to said
Benjamin Wolhaupter letters-patent of the United States for said
invention, in due form of law, under the seal of the Patent Office of
the United States, signed by the Secretary of the Interior, and coun-
tersigned by the Commissioner of Patents of the United States, bear-
ing date of February 24, 1903, and No. 721,644, whereby there was
granted and secured unto the said Benjamin Wolhaupter, his heirs
or assigns, or intended so to be, for the term of seventeen (17) years
from and after the date of said letters-patent, the full and exclusive
right and liberty of making, constructing, using and vending to

others to be used the said invention or improvement, as set forth in said letters-patent, a true and correct copy of which is hereto attached and marked "Exhibit C," and by virtue thereof the said Benjamin Wolhaupter became, and was, the sole owner of all rights and privileges granted and secured, or intended to be granted and secured in and by said letters-patent.

XII. And your orator further shows unto your Honors that after the date of said letters-patent No. 721,644, and during all of the period of the infringement by and wrongful acts of the defendants hereinafter complained of, your orator, The Railroad Supply Company, was the possessor of the exclusive and sole right, license and privilege of and from said Benjamin Wolhaupter of manufacturing and selling tie-plates constructed under and embodying said Wolhaupter invention set forth and claimed in letters-patent No. 721,644; and also shows unto your Honors that the said patentee, Benjamin Wolhaupter, for a suitable consideration, sold, assigned and conveyed unto your orator the entire right, title and interest in and to his said invention and letters-patent No.
10 721,644 and in and to all rights of action accrued or that might thereafter accrue for damages for infringement thereof, which sale and assignment was evidenced by a suitable instrument in writing, as by said original instrument or duly certified copy thereof in court to be produced will more fully appear; whereby your orator became and now is exclusively possessed of the entire right, title and interest in said invention and letters-patent No. 721,644 and of all the rights and privileges thereunder.

XIII. Your orator further shows unto your Honors that the inventions set forth and claimed in said letters-patent No. 538,809, No. 691,332 and No. 721,644 are capable of conjoint as well as separate use, and are so conjointly used by your orator in the manufacture and sale of tie-plates and also by the defendants aforesaid in the manufacture and sale of the infringing tie-plates herein complained of; that each of said inventions is of great value and utility and went immediately into public favor when tie-plates embodying the same were placed upon the market by your orator; that since your orator came into possession of the exclusive right and license to manufacture and sell tie-plates constructed under and embodying each of the said inventions, the said The Railroad Supply Company has invested and expended large sums of money upon and has been to great trouble in and about said inventions set forth and claimed in each of said letters-patent, for the purpose of carrying on the business of manufacturing and selling its tie-plates according to and employing and containing said patented inventions and making the same profitable to itself and useful to the public; that each of said inventions or improvements have been and are of great benefit and advantage to your orator and to the public; that tie-plates embodying said inventions or improvements when first manufactured and sold at
11 once went into an extensive public use and largely superseded other tie-plates upon the market; that many thousands of tons of tie-plates were made according to each of said inventions all duly marked "Patented," together with the date of said letters-pat-

ent and have been sold by your orator to the great advantage of the public; that the public generally, including many of the largest railway corporations of the United States, such for example as the Atchison, Topeka & Santa Fe Railroad, have purchased and are now using large quantities of said tie-plates so exclusively controlled by your orator and have acknowledged and acquiesced in the aforesaid rights of your orator; that your orator has furnished and is now furnishing many of the largest railroads in the United States thousands of tons of tie-plates embodying or containing each of the inventions aforesaid, and being so engaged in the extensive manufacture and sale of said tie-plates your orator has complete facilities for supplying all of the demands of the public and of the railroads therefor, and that your orator believes that it will realize and receive large gains and profits from said inventions if the infringement by said defendants and their confederates herein complained of shall be prevented.

XIV. Yet the said defendants (well knowing the premises and the rights secured to your orator as aforesaid, and contriving to injure your orator and to deprive it of any benefits or advantages which might and otherwise would accrue unto it from said inventions), after the issuing of said letters-patent, as aforesaid, and before the commencement of this suit did, as your orator is informed and believes and therefore avers, without any license or permission, and without the will of your orator and in violation of your orator's rights and in infringement of each of the aforesaid letters-patent at Chicago, in the County of Cook and State of Illinois, in said Northern District of Illinois (as well as at Elyria, County of Lorain,
12 and State of Ohio, and elsewhere in the United States), unlawfully and wrongfully, and in defiance of your orator's rights, made or caused to be made, used or caused to be used, sold or caused to be sold or given away to be used, large numbers of tie-plates made according to and embodying each of said inventions so exclusively belonging to your orator: and your orator charges it to be a fact that said defendants and their confederates continue so to do; that they are threatening to make or cause to be made the aforesaid tie-plates in large quantities and are offering to supply the market therewith and to sell or to give away large numbers thereof; that some of the tie-plates sold or offered for sale by said defendants are illustrated in the attached photograph marked "Exhibit D," and are a copy and duplicate of complainant's tie-plates which have been long on the market and have been sold by your orator, The Railroad Supply Company, in large quantities to railroads; all in defiance of the rights acquired by and secured to your orator as aforesaid, and to your orator's great and irreparable loss and injury, and by which your orator has been and still is deprived of great gains and profits which it might and otherwise would have obtained, but which have been received and enjoyed, and are being received and enjoyed, by the said defendants by and through their aforesaid unlawful acts and doings.

XV. And your orator further shows unto your Honors, on information and belief, that said defendants have made and realized large

profits and advantages from the wrongful acts herein complained of, but to what extent, and how much exactly, your orator does not know and prays a discovery thereof, and that said defendants have a large quantity of tie-plates on hand which they are offering for sale; and your orator says that the use of said inventions by
13 said defendants and the preparation for, and avowed determination to continue the said unlawful acts, are in disregard and defiance of the rights of your orator and tend to your orator's great injury, and particularly do such unlawful acts have the effect of encouraging and inducing others to venture to infringe said letters-patent in disregard of your orator's rights, and that your orator has no adequate remedy at law with respect to the wrongful acts of the defendants herein complained of.

XVI. And your orator further shows unto your Honors that it has caused notice to be given to said defendants of said infringements, and of the rights of your orator in the premises, and has requested said defendants to desist and refrain therefrom; but said defendants have disregarded said notice and refused to desist from said infringement, and still continue to make and sell said infringing tie-plates without right or license from your orator.

XVII. And forasmuch as your orator can have no adequate relief except in this court, and to the end therefore, that the said defendants may, if they can show why your orator should not have the relief hereby prayed, and may according to their best and utmost knowledge, remembrance, information and belief, full, true, direct and perfect answer make to the premises (but not under oath however, answer under oath being hereby expressly waived), and to all the several matters hereinbefore stated and chargd, as fully and particularly as if severally and separately interrogated as to each and every of said matters, and may be compelled to account for and pay to your orator the profits by them acquired, and the damages suffered by your orator from the aforesaid unlawful acts, your orator prays as follows:

14 XVIII. And your orator prays that said defendants, The Hart Steel Company, its officers managers, clerks, servants, agents, attorneys and workmen, and each and every of them, and Guilford S. Wood, may be restrained and enjoined, provisionally as well as perpetually, by the order and injunction of this Honorable court, from directly or indirectly making, constructing, causing to be made, using, causing to be used, vending, causing to be sold, delivering, giving away or putting into practice, operation or use, any tie-plates embodying or made in accordance with, or from in any manner infringing upon either of the said letters-patent No. 538,809, No. 691,332 or No. 721,644.

XIX. And your orator prays that the said defendants may be compelled to pay, by a decree of this court, the profits unlawfully obtained by them, or which they may hereafter derive by reason of the aforesaid infringement, together with the damages thereby suffered by your orator on account of said infringement, as well as the costs of this suit to be taxed; and that your orator may have such

other and further relief as to this Honorable court shall seem meet, and as shall be agreeable to equity.

XX. And that the said defendants may, The Hart Steel Company, upon the corporal oath of one of its officers, and according to the best of their knowledge, remembrance, information and belief, full, true, direct and perfect answer make to the interrogatory hereinafter set forth, and by the note hereunder written they are required to answer.

Interrogatory.

1. Have the defendants, or either of them, directly or indirectly, constructed, or caused to be constructed, used or caused to be used, vended or caused to be vended, or given away for use, previous to the filing of this Bill of Complaint, and subsequent to the respective dates of said letters-patent hereinbefore mentioned, any tie-plates constructed substantially as illustrated in the attached photograph marked "Exhibit D?"

XXI. May it please your Honors to grant unto your orator the writ of injunction, provisional as well as perpetual, issuing out of and under the seal of this Honorable court, commanding, enjoining and restraining the said defendants, The Hart Steel Company and Guilford S. Wood, its officers and its and his managers, clerks, servants, agents, attorneys and workmen, and each and every of them, as hereinbefore prayed.

XXII. May it please your Honors to grant unto your orator the writ of subpœna issuing out of and under the seal of this Honorable court, directed to the said defendants, The Hart Steel Company and Guilford S. Wood, commanding each of them by a certain day and under a certain penalty, to be and appear in this Honorable court, then and there to answer the premises, and to stand and abide by such order and decree as may be made against them.

THE RAILROAD SUPPLY COMPANY,
By HENRY S. HAWLEY, *Its President.*

OFFIELD, TOWLE & LINTHICUM,
Solicitors and of Counsel.

POOLE & BROWN,
Solicitors for Complainant, 808 Marquette Building, Chicago, Illinois.

C. C. LINTHICUM,
C. CLARENCE POOLE,
TAYLOR E. BROWN,
Of Counsel.

NOTE.—The defendants are required to answer under oath the interrogatory contained and numbered 1.

POOLE & BROWN,
Complainant's Solicitors.

16 UNITED STATES OF AMERICA,
State of Illinois, County of Cook, ss:

On this 25th day of November, A. D. 1908, before me personally appeared Henry S. Hawley, who, being by me first duly sworn, deposes and says: that he is the president of The Railroad Supply Company, the complainant; that he has read the foregoing bill of complaint and knows the contents thereof, and that the same is true of his own knowledge, except as to the matters therein stated on information and belief, and as to those matters he believes the said statements to be true; and that he verily believes that the said Benjamin Wolhaupter was the first, true and original inventor of the several inventions described and claimed in the letters-patent No. 538,809, No. 691,332 and No. 721,644, referred to in said bill of complaint; that he has examined the tie-plate made and sold by the defendants; that the illustration hereto attached as "Exhibit D" is a correct representation thereof; and that the said tie-plate, in affiant's opinion, embodies each of the said inventions and is an infringement of the claims of each of said letters-patent aforesaid.

HENRY S. HAWLEY.

Subscribed and sworn to before me this 25th day of November, A. D. 1908.

E. H. BELL,
Notary Public.

Endorsed: Filed Dec. 9, 1908. H. S. Stoddard, Clerk.

(No Model.)

B. WOLHAUPTER.

TIE PLATE.

No. 538,809. Patented May 7, 1895.

Fig. 2.

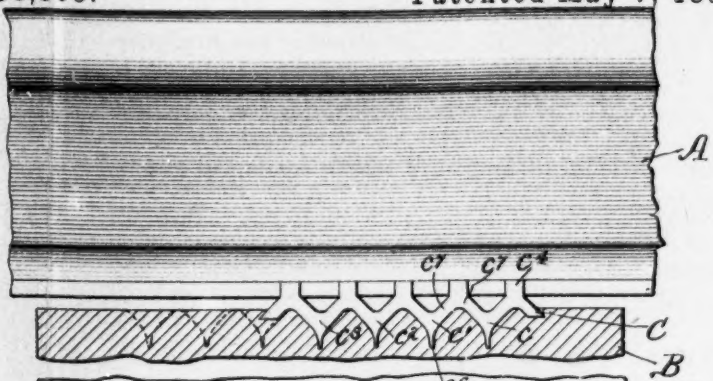


Fig. 1.

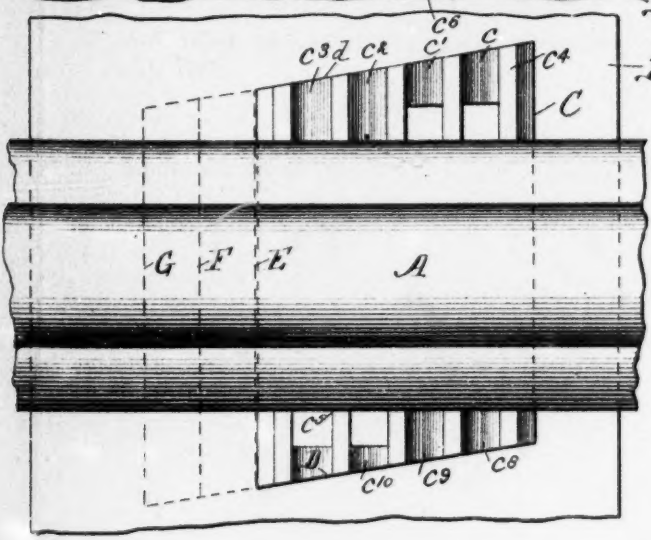
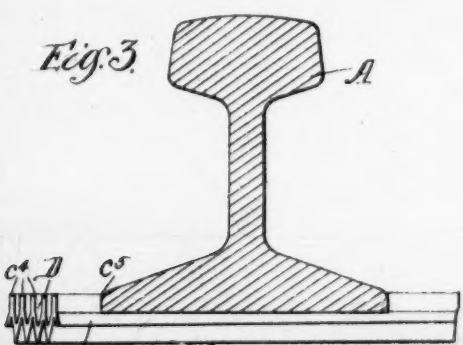


Fig. 3.



Witnesses.
Wm. M. Rheem.
Wm. F. Fleming.

Inventor.
Benjamin Wolhaupter
by Walter N. Chamberlin.
Atty.

UNITED STATES PATENT OFFICE.

BENJAMIN WOLHAUPTER, OF MORGAN PARK, ILLINOIS.

TIE-PLATE.

SPECIFICATION forming part of Letters Patent No. 538,809, dated May 7, 1895.

Application filed March 13, 1895. Serial No. 541,521. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN WOLHAUPTER, a subject of the Queen of Great Britain, residing at Morgan Park, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Tie-Plates; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

Heretofore in the use of railway tie plates two general styles of plates have been employed. The plates were first put into use without top flanges, that is, flanges on the top of the plate against which the rail flange could abut and the plate thereby be utilized to prevent the lateral movement of the rail and consequent widening of the gage; but in the use of these smooth top plates it was found that the constant thrusts of the rail laterally tended to shear the spike and the latter had to be frequently renewed. To relieve the spike and obviate this item of renewals the plate was provided with a top ridge or flange against which the rail flange could bear, the flanges on the under side of the plate which engaged the tie supposedly holding the plate against any movement along the tie and the plate thereby relieving the spikes from the shearing action of the rail caused by its lateral thrust; but in the use of these plates with top flanges it has been found that the lateral thrust of the rail has caused the flanges on the under side of the plate to break or compress the wood fibers and allow the plate to creep along the tie longitudinally thereof. When the plate has once moved it has been practically impossible to again hold the top flange against the rail flange after the rail has been returned to its original and proper position, since the under flanges have no wood to abut against, the result being that even with the top flange on the plate, the spike has had to take the thrust of the rail after the plate has been in use a short time thus rendering useless this top flange and soon shearing the spike.

My invention has for its object the production of a plate which while being provided with the top flange to receive the thrust of the rail is so constructed on its under side that after it has been moved by the lateral pressure of the rail it, together with the rail can be easily moved back to the proper position to maintain the gage, and be held in that position even more firmly than when originally laid.

The invention further contemplates a form of plate provided with top and under flanges which shall be extremely strong in its construction and effective in its designed use, and yet easily rolled or formed into shape as well as very light weight.

It consists in a combination of devices and appliances hereinafter described and claimed.

In the drawings, Figure 1 is a plan view of the rail and plate thereon and portion of the tie. Fig. 2 is a side elevation of the rail, showing an end elevation of the plate. Fig. 3 is a cross-section of the rail and side elevation of the plate.

In carrying out the invention A represents the track rail, B the tie, and C the tie plate. The plate is preferably, although not necessarily formed into the shape shown more particularly in Fig. 2, that is to say, what may be termed a trussed shape so that flanges are provided on both the under side as at c, c', c^2, c^3 and top sides as at c^4. On the top side a way c^5 for the rail or what may be termed the rail seat is provided. The flanges on the under side are preferably shaped with comparatively sharp edges c^6 so that they will readily enter and separate the grain of the tie. As will be seen when in position these under flanges extend parallel with the grain of the tie, the ends being substantially blunt or square and forming abutments to prevent so far as possible the plate from creeping along the tie. It will be observed that by this form of plate there is much less opportunity or chance of buckling than with the ordinary flat plate since each point where the rail rests upon the plate, is supported and trussed by metal which is more or less on edge instead of on its side, thereby forming for each resting point of the rail two girders c^7 joined at the apex by the top flanges c^4 where the rail rests. By the above construction also the wood between the flanges c, c', c^2, c^3 will, because of the sloping of the approaching sides of the flanges be compressed between the flanges, thereby greatly aiding in sustaining the weight put upon the plate, and also in excluding moisture from the wood under the plate. A form of plate such as I have just de-

scribed is also of material advantage in that I am enabled to make it much lighter in weight. In this construction of plate with the same amount of material as is ordinarily used in tie plates a much stronger plate is obtained. Heretofore it has been a commercial necessity in order to get the price of plates where they could be sold for use on the cheaper grade of ties, to reduce and diminish as far as possible the material and consequently the weight of the plate. The result has been that with the plate flat and thin it has buckled when the rail pressure has been brought on it thereby damaging the tie as well as rendering the plate useless as a bearing for the rail; but in my construction since the points where the rail rests are supported by metal more or less in upright position the plate is greatly strengthened without addition of weight. So also by a construction as above the top of the plate where the rail is seated comprises a series of flat portions with a series of depressions between, so that while there is abundant wearing surface between the rail and plate, there is space for sand, cinders, &c., to work out. Again, these depressions permit the draining off of water and moisture so that in cold weather the top of the plate particularly the space between the rail and plate is not covered with ice and the friction between the rail and plate thereby either lessened or obviated entirely.

I will now describe the second feature of the invention, viz., the ability to adjust the plate to take up any widening of the gage due to the lateral movement of the plate and rail. The ends of the engaging flanges on the under side of the plate are regularly stepped or cut on a diagonal line as compared with the rail flange. It is of course obvious that the ends of the flanges might be cut on this diagonal line or the entire end of the plate cut in this way. In my present drawings I have shown the latter construction, the entire end of the plate being sheared diagonally as at D.

The operation is as follows: The plate is of course originally engaged to the tie in such a location as that the rail will be in proper position to form the proper gage of track. Each of the flanges c to c^4 will displace enough of the fiber to allow them to enter the face of the tie. After the plate has been in use some time the lateral pressure of the rail will move the plate to a greater or less extent along the length of the tie and the ends d of each flange c to c^2 will compress the fiber in advance of it. Now if the plate is removed there will be a series of indentations or perforations in the face of the tie made by the flanges c to c^4 and these indentations or perforations will be stepped or on a diagonal line. The plate is now replaced on the tie with the edge E moved to a position shown by dotted lines F. This will bring each flange c to c^3 into the indentation or perforation originally occupied by the flange next adjacent with the exception of the flange c^3 nearest the edge E, this flange making a new indentation for itself. Now if the end d of each flange c to c^3 is brought to a bearing against the end of the indentation made by the next preceding flange and the ends of these flanges are on a diagonal line as compared to the rail flange, the plate will be found to have moved lengthwise of the tie a distance equal to the difference between the length of each plate flange measured from its end to the rail flange. Now as will be seen this movement of the plate lengthwise of the tie will force the rail laterally a corresponding distance, thus restoring the desired gage of the track. If one shifting of the plate is not sufficient to take up the abnormal width of the gage, or if after the plate has been shifted, it again gives way to sufficiently widen the gage the edge E can be shifted to the position shown by dotted lines G.

It will be seen by the above description that I have described only one end of the plate as having the flanges stepped or on a diagonal line. In practice, however, both ends could and probably would be beveled or stepped and as I will presently explain this will give an opportunity to reverse the plate end for end and obtain additional adjustments. It is obvious that after the second adjustment the flange c' will occupy the space originally occupied by the flange c^3. Now by reversing the plate end for end, the end c^3 of the flange c would be in the indentation originally occupied by the flange c^3. Therefore by making the distance between the rail flange and the end c^3 one step greater than the distance from the rail flange to the end c' an additional adjustment is gained when the plate is reversed and by making the ends c^9, c^{10} respectively a step longer than the preceding flange two more adjustments are gained. It will thus be seen that after the plate is laid it can be shifted twice, then turned end for end (an adjustment being gained by the turning) and then shifted twice, making in all five adjustments. It is obvious, however, that the number of adjustments can be greatly increased if desired, only being limited by the width of the tie.

A material advantage in thus employing the indentations for another flange after they have once been made by a preceding flange, is that every time the plate shifts, by virtue of the pressure of the rail laterally, it compresses the fibers in advance of it so that by the time the plate has been adjusted once or twice it takes much more pressure and a much longer time for the rail to shift it more.

Another feature of the invention is the provision of the pairs of spike holes in diagonal corners. This is for the purpose of permitting the spike to be driven into the old spike hole in the tie after the plate has been adjusted, thus obviating the necessity of driving a new hole in the tie every time the plate is adjusted, and thus spoiling the tie.

It is obvious that the construction just described is susceptible of many changes, and

the prime object of the invention still be attained. For instance, the under flanges might be divided, or instead of flanges they might be merely projections and the plate instead of having its end beveled might be square, and the under flanges alone be stepped; or but a single end of the plate need be stepped; or the flanges having one or more of their ends stepped might be applied to a flat plate or to the numerous other constructions of plates now on the market.

In all of the above named variations the principle employed is the same and each would embody the essential idea of my invention which consists in providing a plate on its under side with a series of stepped flanges or projections, that is to say, flanges or projections arranged on a diagonal line with respect to the rail flange.

What I claim is—

1. The combination with the rail and tie of the tie plate provided with a series of stepped tie engaging flanges or projections on the under side, each arranged to fit into the perforation made by the flange or projection next adjacent, whereby when the plate is shifted transversely of the tie it is also shifted longitudinally thereof, substantially as described.

2. The combination with the rail and tie of the tie plate provided on its under side with a series of engaging flanges, adapted to enter the tie at least one end of said plate and flanges being cut on a diagonal line with relation to the rail flange, substantially as described.

3. The combination with the rail and tie, of the tie plate provided on its under side with one or more engaging flanges, adapted to enter the tie extending parallel with the grain of the tie, the opposite ends of said flange or flanges being different distances from the vertical plane of the rail, substantially as described.

4. The combination with the rail and tie of the tie plate provided on its under side with a series of tie engaging flanges or projections, adapted to enter the tie the ends of the flanges or projections at one end of the plate being a greater aggregate distance from the rail flange than the ends of the flanges at the other end of the plate, substantially as described.

5. The combination with the rail and tie of the tie plate provided on its under side with a series of engaging flanges or projections, adapted to enter the tie the ends of which are with respect to each other a variable distance from the vertical plane of the rail flange, the ends of the flanges or projections at one end of the plate aggregating a greater distance from the rail flange than those at the other end of the plate, substantially as described.

6. The combination with the rail and the tie of the tie plate provided on its under side with a series of flanges adapted to enter the tie and at least a portion of which project beyond the vertical plane of each edge of the rail flange, the series of flanges on one side of the vertical plane of the rail flange being longer than those on the other side, substantially as described.

7. The combination with the rail and tie of the tie plate, provided on its under side with a series of flanges adapted to enter the tie and at least a portion of which projects beyond the vertical plane of each edge of the rail flange, at least one end of each flange being arranged on a diagonal line with respect to the rail flange, the series of flanges on one side of the rail flange being longer than the series on the other side, substantially as described.

8. A railway tie plate formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie, and on its upper side with a series of flanges on which the rail rests, substantially as described.

9. A railway tie plate formed with flanges on the under side for entering and engaging the tie parallel with the grain thereof and having on the upper side depressions parallel with and vertically above the flanges on the under side, substantially as described.

10. A railway tie plate the body of which is formed into a series of arches, the lower edges of said arches being provided with tie-entering and engaging devices or flanges, substantially as described.

11. A railway tie plate the body of which is formed into a series of arches the lower edges of which are provided with tie-entering and engaging flanges, and the upper side of the plate having a series of depressions vertically above said engaging flanges, substantially as described.

12. A railway tie plate provided on its under side with tie engaging flanges more or less sharpened extending parallel with the grain of the tie, and with spike holes extending through said flanges, substantially as described.

13. A tie plate provided with at least four spike holes arranged in pairs in diagonal corners of the plate, substantially as described.

14. The combination with the rail and the tie of the plate having on its under side one or more holding flanges or projections adapted to enter and perforate the tie, and at least one or more additional flanges or projections on the plate, the latter being a different distance from the vertical plane of the rail and on a plane parallel with the length of the tie, different from the first named flange or projection whereby when the position of the plate is changed so that the second flange enters the perforations originally occupied by the first, the plate has been shifted along the length of the tie, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

BENJAMIN WOLHAUPTER.

Witnesses:
W. H. CHAMBERLIN,
FLORENCE EMBREY.

No. 691,332. Patented Jan. 14, 1902.

B. WOLHAUPTER.

RAILWAY TIE PLATE.

(Application filed May 3, 1897. Renewed Nov. 9, 1901.)

(No Model.)

Fig. 1.

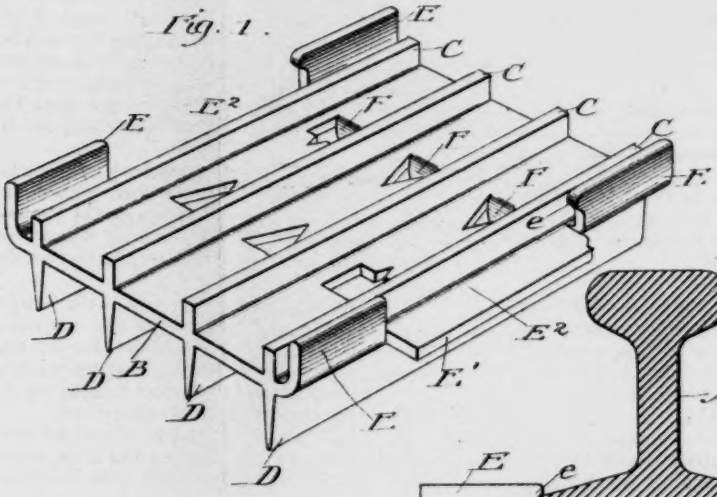


Fig. 2.

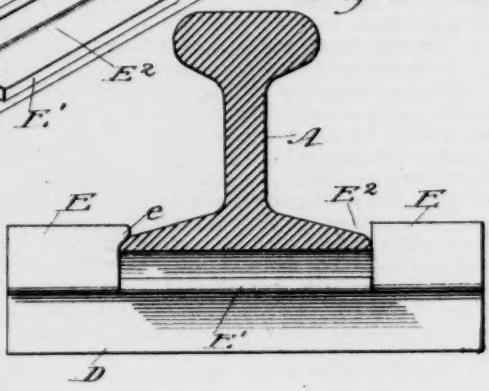


Fig. 3.

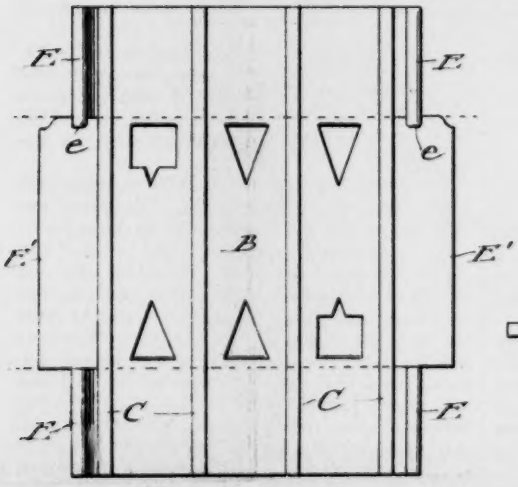
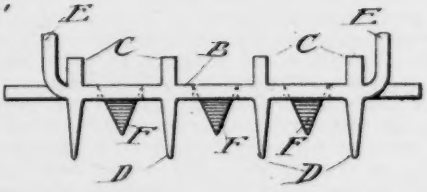


Fig. 4.



Witnesses:
Grant S. Blanchard
De Witt M. Chamberlin

Inventor:
Benjamin Wolhaupter
By Walter H. Chamberlin
Attorney

UNITED STATES PATENT OFFICE.

BENJAMIN WOLHAUPTER, OF CHICAGO, ILLINOIS.

RAILWAY-TIE PLATE.

SPECIFICATION forming part of Letters Patent No. 691,332, dated January 14, 1902.

Application filed May 3, 1897. Renewed November 9, 1901. Serial No. 81,780. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN WOLHAUPTER, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented a certain new and useful Improvement in Railway-Tie Plates, (Case F;) and I declare the following to be a ful clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

It has been found in the use of tie-plates for railroads that there is a material advantage in providing on the upper side of the plate one or more flanges on which the rail-base can rest, so that channels or depressions are provided between the rail-base and the body of the plate proper.

My invention has for its object the production of a tie-plate which while incorporating this feature of flanges on the upper side for sustaining the rail will have the flanges on the lower side so arranged and disposed that there is the least liability of the plate buckling.

To this end, therefore, the invention primarily consists in the provision on the upper side of a tie-plate of one or more flanges or projections for sustaining the rail and on the under side flanges for entering the tie parallel with the grain thereof, the flanges on the lower side being located directly or substantially beneath those on the upper side.

The invention further consists in the provision at each side edge of the plate of flanges which project upward above the rail-base when the latter is on its sustaining-flanges to receive the lateral thrust of the rail.

The invention also consists in other minor features hereinafter described and claimed.

In the drawings, Figure 1 is a perspective view of a tie-plate embodying my invention. Fig. 2 is a side elevation of the plate with the rail shown thereon in section. Fig. 3 is a plan view of the plate, and Fig. 4 is an end elevation thereof.

In carrying out the invention, A represents the rail, and B what I will term the "body proper" of the plate. Located on the upper side of the plate is a series of four upwardly-projecting flanges C. These flanges are preferably, although not necessarily, flat on their upper edges, and their sides are parallel. On the lower side of the plate is a series of four tie-engaging flanges D, extending parallel with and directly beneath the flanges C. These flanges D are preferably deep and narrow or thin, so that they will readily enter the grain of the tie and become embedded therein. At each side of the plate the metal is turned up to form the flanges E, and the middle portion is extended out in a horizontal direction, as at E′, so that a recess E^2 is formed, in which the rail-base sets, the flanges E thus constituting abutments to receive the lateral thrust of the rail. If desired, the portion E′ when it is cut out of the portion E may be so shaped as to provide projections *e*, which fit over the rail-base and hold the latter from tilting. In addition to the flanges which I have just described I may, if I desire, punch out triangular-shaped teeth F and turn them down, as shown in Fig. 4, so that entering the tie they will help the flanges D to prevent the plate moving along the tie.

It will thus be seen by the above construction that I have provided a plate wherein the rail is sustained above the body of the plate by flanges on the upper side of the plate and that directly beneath these flanges are located the tie-engaging flanges, so that the weight will be sustained at the points where there is the greatest pressure on the plate. In addition to this I have provided the flanges E to prevent lateral movement of the rail on its supporting-flanges, and I have also provided an additional means in the shape of the triangular teeth to prevent the movement of the plate on the tie.

What I claim is—

1. A railway-tie plate provided on its upper side with one or more flanges on which the rail may rest or by which it is directly sustained and on the under side with one or more tie-engaging flanges extending parallel with the upper flanges and directly beneath the latter, substantially as described.

2. A railway-tie plate provided on its upper side with one or more flanges on which the rail may rest and by which it is directly sustained and on the under side with one or more tie-engaging flanges extending parallel with the upper flanges and directly beneath

the latter and sharpened to permit them to readily enter the tie, substantially as described.

3. A railway-tie plate provided on its upper side with one or more flanges on which the rail may rest and by which it is directly sustained, on the under side with one or more sharpened tie-engaging flanges extending parallel with the upper flanges and directly beneath the latter, and on the upper side with an additional flange or flanges extending above the plane of the rail-sustaining flanges and adapted to receive the lateral thrust of the rail, substantially as described.

4. A railway-tie plate provided on its upper side with one or more flanges on which the rail may rest and by which it is directly sustained, on the under side with one or more tie-engaging flanges extending parallel with the upper flanges and directly beneath the latter, and on the upper side with an additional flange or flanges extending above the plane of the rail-sustaining flanges and adapted to receive the lateral thrust of the rail, said flange or flanges provided with one or more projections adapted to project over the rail-base, substantially as described.

5. A railway-tie plate provided on its upper side with one or more flanges on which the rail may rest and by which it is directly sustained, on the under side with one or more tie-engaging flanges extending parallel with the upper flanges and directly beneath the latter, and on the upper side, with an additional flange or flanges extending above the plane of the rail-sustaining flange and adapted to receive the lateral thrust of the rail, said plate also provided with one or more teeth turned down from the metal composing the body of the plate, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

BENJAMIN WOLHAUPTER.

Witnesses:

DE WITT W. CHAMBERLIN,

ESTHER M. ROTHELLE.

No. 721,644. PATENTED FEB. 24, 1903.

B. WOLHAUPTER.

TIE PLATE.

APPLICATION FILED MAR. 31, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1

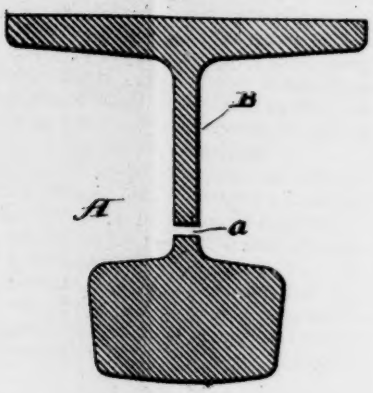


Fig. 2

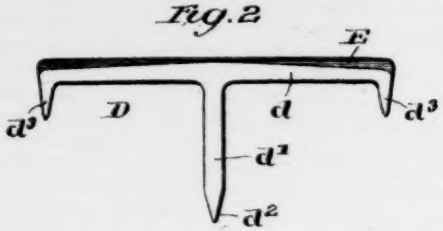


Fig. 3

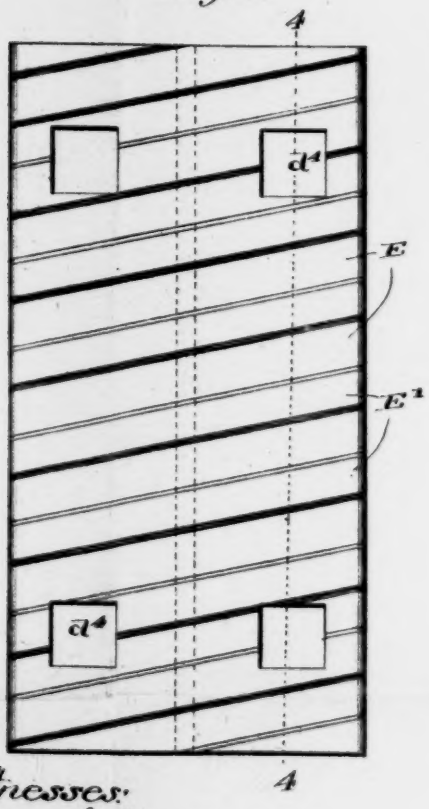
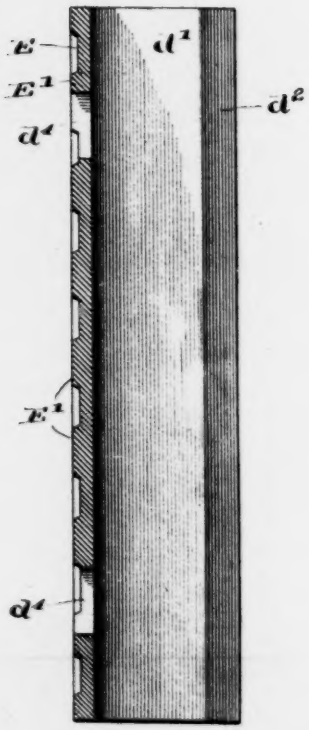


Fig. 4



Witnesses:
Harold G. Barrett
Carl H. Crawford

Inventor:
Benjamin Wolhaupter
By Poole & Brownell
Attys.

"Exhibit C to Bill of Complaint"
and
"Complainant's Exhibit No. 3, Wolhaupter Patent
No. 721,644."

No. 721,644. PATENTED FEB. 24, 1903.

B. WOLHAUPTER.

TIE PLATE.

APPLICATION FILED MAR. 31, 1902.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5

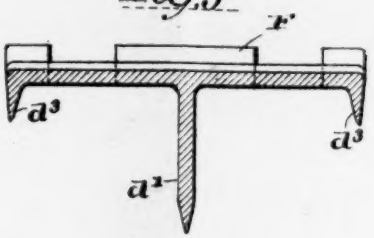


Fig. 8

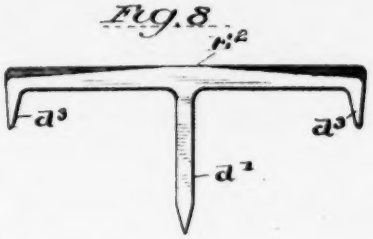


Fig. 6

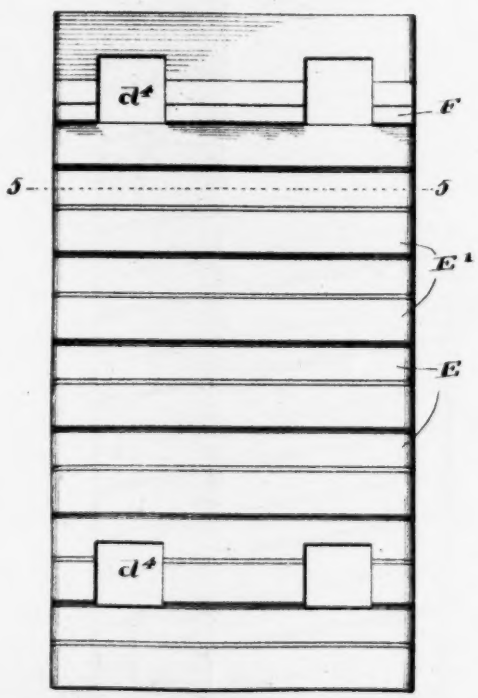
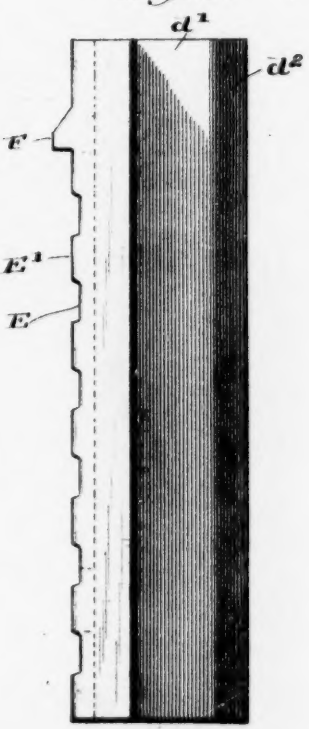


Fig. 7



Witnesses:
Harold G. Barrett
Carl H. Crawford

Inventor:
Benjamin Wolhaupter.
By Poole & Brown
Atty's.

UNITED STATES PATENT OFFICE.

BENJAMIN WOLHAUPTER, OF CHICAGO, ILLINOIS.

TIE-PLATE.

SPECIFICATION forming part of Letters Patent No. 721,644, dated February 24, 1903.

Application filed March 31, 1902. Serial No. 100,667. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN WOLHAUPTER, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Tie-Plates; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in railway-tie plates and embraces, among others, the following objects: first, the manufacture of a tie-plate made from old or discarded railroad-rails, whereby the cost of manufacture will be greatly cheapened; second, the manufacture of a tie-plate which will more firmly cling to the ties than those heretofore in common use; third, the manufacture of a tie-plate with the least amount of metal consistent with durability and strength, with a view of cheapening the cost of manufacture, and, fourth, the manufacture of a tie-plate of such configuration upon its surface that water, sand, or other deleterious material will be drained off or away from the same. These and other objects of the invention will be readily comprehended from the accompanying drawings and the description thereof and will be more clearly pointed out in the claims appended hereto.

In said drawings, Figure 1 illustrates in cross-section the two parts of an ordinary railway-rail separated and from one of which my tie-plate may be made. Fig. 2 shows an end view of one form of the tie-plate embodying my invention. Fig. 3 is a top plan view of another form of my tie-plate. Fig. 4 is a longitudinal vertical sectional view taken upon the line 4 4 of Fig. 3. Fig. 5 is a sectional view taken upon the line 5 5 of Fig. 6, showing another modified form of tie-plate. Figs. 6 and 7 are respectively top plan and side views of the form of tie-plate shown in Fig. 5. Fig. 8 illustrates in an end view still another modification.

In said drawings, A represents as a whole an old railroad-rail which has been cut or split lengthwise at *a*, leaving the flange and the web in one piece B and the head in another piece C. The latter forms a convenient billet for the manufacture of harrow-teeth or other light articles as commonly made, or it may be rolled out into a billet-plate in a familiar manner. The piece B forms a shape ready to be manufactured into my improved tie-plate with very little additional rolling.

It is not thought necessary to illustrate or to describe the various steps to which the part B of the old rail is subjected before it becomes the finished tie-plate shown in Fig. 2. It will be understood by those skilled in the art that the part B goes through several passes in the rolls for the purpose of widening the foot-flange of the rail and making it of equal thickness from end to end, while the web would desirably be made thinner and with parallel sides and the extreme ends or points sharpened. This tie-plate (lettered D) as a whole consists of a plate proper, *d*, provided longitudinally with a central flange d', having parallel sides and a sharpened end d^2 in order that the flange may enter the fibers of the wood easily and deeply. The side margins of the plate *d* are provided with longitudinally-arranged flanges d^3, each projecting in the same direction as the flange d', each being sharpened at its end, but each being shorter than the flange d'.

d^4 d^4 are suitable spike-holes extending through the tie-plate *d*. As a preferred construction I have shown the outside edges or faces of the side flanges d^3 as being inclined downwardly and inwardly toward the central flange d'. These may, however, be rolled with the side faces parallel with the faces of the central flange d'.

The upper surface of the plate D is provided with a series of sand spaces, channels, or grooves E E. These grooves are tapered or inclined away from the center—that is to say, the groove is deepest at the side margins of the plate above the flange d^3 and is shallowest over the flange d'. In the form shown in Figs. 5, 6, and 7, however, the groove is of equal depth throughout its length, while in the form shown in Fig. 8 the groove follows the inclination of the form shown in Fig. 2, but with this distinction: The grooves in Fig. 2 practically unite in the center, while they do not so unite in the form shown in Figure 8. The grooves may extend squarely across the tie-plate and the flanges, as shown

in Fig. 6, or they may extend in a diagonal line, as shown in Fig. 3, the object being to so dispose the grooves as to provide sand-spaces below the rail-bearing surface.

Between the grooves E, I provide transversely-arranged bars or ribs E', which extend from side to side of the plate and serve not only to stiffen the latter, but also act as a tie to hold the flanges d' and d^3 firmly together. These bars E' may also run in a diagonal manner, as is shown in Fig. 3, or at right angles, as shown in Fig. 6.

In the form shown in Figs. 2 and 5 the channels or grooves do not extend to the surface of the bars E', whereas in the form shown in Fig. 8 the channels E extend only part way across the tie-plate, leaving a flat space E^2 at the center. In the form shown in Figs. 5, 6, and 7 it may be desirable to use one or more shoulders for the rail-flange, and such rail-abutting shoulder is shown at F. The object being to drain the water or sand from the rail-bearing surface of the tie-plate, it is obvious that the channel shown in Fig. 5 will accomplish that purpose, and therefore I do not limit my invention to facing the channels with sloping bottoms across the tie-plate, since manifestly these channels may be faced in any desired direction.

The flanges d^3 serve an important purpose in addition to stiffening the tie-plate proper—that of confining the fiber of the wood beneath the plate. The inside sloping faces of these flanges d^3 tend to force the wood inward and toward the central holding-flanges d', thus forcing the wood of the tie to a firm and close contact with the central flange, and thereby preventing its withdrawal. I am aware that tie-plates have heretofore been made with a central flange. These, as I understand, have been abandoned, it being found that the loading of the rail comes upon one edge and that the opposite edge rises off the tie, and thus sucks in water and sand beneath the tie-plate to the great detriment of tie-plates as well as the tie, each of which is thus more rapidly destroyed. By placing the flanges d^3 upon the outer margins of the tie-plate this tendency of water and sand to suck in underneath the tie-plate or between the tie-plate and the tie is entirely prevented, and the tie is thus preserved and its life is thus prolonged. Of course it will be understood that my tie-plate D will be placed upon the tie longitudinally—that is to say, so that the flanges d' and d^3 will be parallel with the grain of the wood.

It will be manifest from the foregoing description that my tie-plate may be easily manufactured, that it will be cheap and durable, and that it possesses all of the elements of strength with none of the disadvantages of tie-plates heretofore in use, which are provided with flanges. It will also be observed that my tie-plate may be cheaply manufactured, because by making it from old railway-rails, split as shown in Fig. 1, the body of the plate and the deep central flange are already formed, and it therefore requires fewer passes through the rolls to complete the plate than if made from a square billet, as is commonly done.

What I claim, and desire to secure by Letters Patent, is as follows:

1. A tie-plate provided on its lower surface with flanges running lengthwise of the plate, and in its upper surface with channels or grooves running across the flanges on its lower surface.

2. A tie-plate provided on its lower surface with one or more longitudinally-arranged flanges, and on its upper surface with transversely-arranged channels or grooves which extend across the plate and reach to both side margins of the same.

3. A tie-plate provided on its lower surface with longitudinally-arranged flanges, and in its upper surface with channels or grooves, extending diagonally across the lower flanges, said channels or grooves sloping downwardly from the center of the plate and reaching to the side margins thereof.

4. A tie-plate having a deep central flange provided with vertical sides, and two side flanges arranged parallel with the central flange, and with the grain of the wood on which the tie-plate is to be used.

5. A tie-plate provided with channels extending transversely across the top of the plate and with flanges arranged longitudinally on the bottom of the plate and in a direction to cross the channels, said flanges being inclined on their inner faces to compress the fiber of the tie.

6. A tie-plate provided on its lower faces with flanges running lengthwise of the plate and upon its upper surface with channels or grooves running in a direction diagonally across the flanges below.

7. A tie-plate provided in its rail-supporting surface with transverse grooves or channels, and at one margin of said supporting-surface with a transverse rail-abutting shoulder.

8. A tie-plate provided on its lower surface with longitudinally-arranged flanges, and having in its rail-supporting surface transversely-arranged channels or grooves and at one margin of said surface a transverse rail-abutting flange.

9. A tie-plate provided in its rail-supporting surface with transverse grooves or channels, reaching to the edge of the plate, and at one margin of said surface a transverse rail-abutting shoulder.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 29th day of March, A. D. 1902.

BENJAMIN WOLHAUPTER.

Witnesses:
TAYLOR E. BROWN,
WILLIAM L. HALL.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION
OF THE NORTHERN DISTRICT OF ILLINOIS.

--*--

THE RAILROAD SUPPLY COMPANY)
vs.) No. 29,294.
THE HART STEEL COMPANY and)
GUILFORD S. WOOD)

"Complainant's Exhibit No. 16, Photograph Defendant's Tie Plate".

June 9, 1909.

E. R. Wilkins
Notary Public.

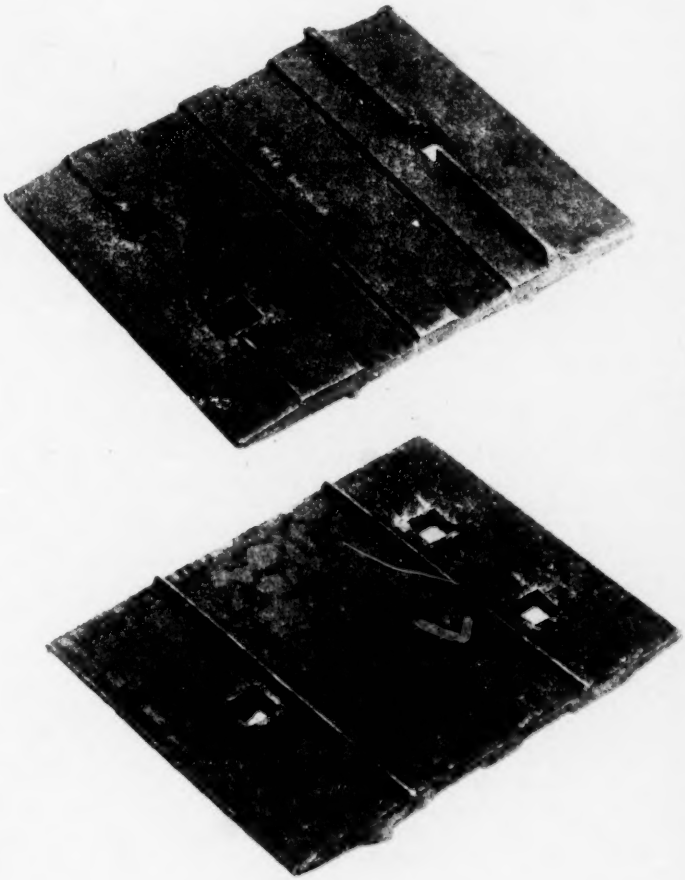


EXHIBIT "D" TO BILL OF COMPLAINT.

The Circuit Court of the United States in and for the Eastern Division of the Northern District of Illinois.

No. 29294. In Equity.

THE RAILROAD SUPPLY COMPANY
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD.

Patents Nos. 538,809, 691,332, 721,644.

Answer.

Answer of The Hart Steel Company and Guilford S. Wood, efendants, to the Bill of Complaint of The Railroad Supply ompany, Complainant.

the Honorable the Judges of the Circuit Court of the United tates in and for the Eastern Division of the Northern District f Illinois:

hese defendants above named, now and at all times saving and rving unto themselves all manner of benefit and advantage of ption which can or may be had or taken to the manifold errors, rtainties, insufficiencies and imperfections in said Bill of Comnt contained, for answer thereunto or unto so much or such s thereof as these defendants are advised is material or neces- for them to make answer to, answering say:

hese defendants admit that on the 7th day of May, 1895, Letters ent of the United States No. 538,809 for an alleged improvet in a tie-plate were issued to Benjamin Wolhaupter, but whether application therefor and all proceedings had therein were in rdance with law or in accordance with the then existing laws Congress, or whether the said Benjamin Wolhaupter duly com- d in all respects with the conditions and requisitions of said , these defendants do not know and are not informed, save by Bill of Complaint, and they therefore deny the same and e the complainant to make proof thereof as it may be advised.

hese defendants, however, deny that the said Benjamin Wolhaupter was the true, original or first inventor of the alleged improvement in a tie-plate described and claimed in said Letters Patent No. 538,809, or of any material or substial part thereof, and they deny that the alleged improvement ew or is useful or was not known or used before, and they fur- deny that the said alleged improvement was not in public use n sale in the United States for more than two years prior to the of his said application for a patent therefor, and these defend- further deny that by virtue of said Letters Patent, or in any , there was secured to the said Benjamin Wolhaprter, his heirs, l representatives and assigns, any exclusive right in and to the

said alleged improvement in said Letters Patent described and claimed.

II. These defendants admit that on the 14th day of January, 1902, Letters Patent of the United States No. 691,332, for an alleged improvement in a railway tie-plate were issued to one Benjamin Wolhaupter, of Chicago, Illinois, but whether the application therefor and all proceedings had therein were in accordance with law or in accordance with the then existing laws of Congress, or whether the said Benjamin Wolhaupter complied in all respects with the conditions and requisitions of said laws, these defendants do not know and are not informed save by said bill of complaint, and they therefore deny the same and leave the complainant to make proof thereof as it may be advised.

These defendants, however, deny that the said Benjamin Wolhaupter was the true, original or first inventor of the alleged improvement in machinery for the manufacture of a railway tie plate described and claimed in said Letters Patent No. 691,332, or of any material or substantial part thereof, and they deny that the said alleged improvement is new or is useful or was not known or used before, and they further deny that the said alleged improvement was not in public use or on sale in the United States for more than two years prior to the date of his said application for a patent therefor, and these defendants further deny that by virtue of said Letters Patent, or in any way, there was secured to said Benjamin Wolhaupter, or to his heirs, legal representatives or assigns, any exclusive right in and to the said alleged improvement in said Letters Patent described and claimed.

III. These defendants admit that on the 24th day of February, 1903, Letters Patent of the United States No. 721,644, for an alleged improvement in a tie plate were issued to one Benjamin Wolhaupter, of Chicago, Illinois, but whether the application
37 therefor and all proceedings had therein were in accordance with law or in accordance with the then existing laws of Congress, or whether the said Benjamin Wolhaupter duly complied in all respects with the conditions and requisites of said laws, these defendants do not know and are not informed save by said bill of complaint, and they therefore deny the same and leave the complainants to make proof thereof as it may be advised.

These defendants, however, deny that the said Benjamin Wolhaupter was the true, original or first inventor of the alleged improvement in a tieplate described and claimed in said Letters Patent No. 721,644, or of any material or substantial part thereof, and they deny that the said alleged improvement is new or is useful or was not known or used before, and they further deny that the said alleged improvement was not in public use or on sale in the United States for more than two years prior to the date of his said application for a patent therefor, and these defendants further deny that by virtue of said Letters Patent, or in any way, there was secured to said Benjamin Wolhaupter, or to his heirs, legal representatives or assigns, any exclusive right in and to the said alleged improvement in said Letters Patent described and claimed.

IV. These defendants further answering, say that they do not know and are not informed, save by the bill of complaint herein, whether by virtue of an assignment in writing, or in any other way, any right, title and interest in, to or under the said three Letters Patent No. 538,809, 691,332 and 721,644 recited in said bill of complaint became vested in the said complainant. These defendants denying each and every material averment contained in said bill of complaint appertaining to the complainant's title, call on the said complainant to make full and sufficient proof thereof.

V. These defendants, further answering, say that they do not know and are not informed save by the bill of complaint herein, whether the said alleged improvements referred to in the bill of complaint herein have been extensively applied to practical use, but these defendants den[illegible]e complainant has been, or but for the acts of these defen[illegible] complained of in the bill of complaint herein, would still be [illegible]he undisturbed possession, use and enjoyment of any exclusive privileges under said several Letters Patent, or in receipt of any profits therefrom.

VI. These defendants, further answering, deny that they are now constructing or using, or have ever constructed or used or intend to construct or use tieplates or material parts thereof,
38 substantially the same in construction and operation as in the said several Letters Patent in said bill of complaint described and claimed, or that they have done any act or thing, or are doing any act or thing, or intend to do any act or thing, containing, embodying or embracing the alleged invention or any material or substantial part thereof, or in infringement of the said several patents or of any claim or claims therein contained.

VII. And these defendants, further answering, deny that the said Benjamin Wolhaupter was the first and original inventor of the alleged improvement described and claimed in said Letters Patent No. 538,809, or that the said Benjamin Wolhaupter was the first and original inventor of the alleged improvement described and claimed in said Letters Patent No. 691,332, or that the said Benjamin Wolhaupter was the first and original inventor of the alleged improvement described and claimed in said Letters Patent No. 721,644, but on the contrary, these defendants aver that the said alleged improvements and inventions described and claimed in said several Letters Patent, in all material and substantial parts thereof, had been, prior to the alleged inventions or discoveries thereof by the said Benjamin Wolhaupter, described and shown in the following United States Letters Patent, to-wit:

U. S. Letters Patent No. 66,437, granted July 2, 1867, to J. E. Wootten for railroad chair.

U. S. Letters Patent No. 93,875, granted August 17, 1869, to J. Gregory for railway chair and sleeper.

U. S. Letters Pattnt No. 124,856, granted March 19, 1872, to Clinton Roosevelt, for splice pieces for railway rails.

U. S. Letters Patent No. 203,570, granted May 14, 1878, to I. Wells, for railway chair.

U. S. Letters Patent No. 249,407, granted November 8, 1881, to

D. Servis, for wear plate for railroad ties. Reissue No. 10302, granted April 3, 1883, to D. Servis, for wear plates for railroad ties.

U. S. Letters Patent No. 280,030, granted June 26, 1883, to W. F. Gould, for railroad rail cushion and joint.

U. S. Letters Patent No. 294,816, granted March 11, 1884, to D. Servis, for wear plates for railroad ties.

U. S. Letters Patent No. 313,067, granted March 3, 1885, to C. Fisher, for rail joint.

U. S. Letters Patent No. 329,867, granted November 3, 1885, to A. M. Trude, for railroad track fastening.

39 U. S. Letters Patent No. 360,673, granted April 5, 1887, to C. Fisher for rail joint.

U. S. Letters Patent No. 379,210, granted March 13, 1888, to J. W. Currier for wear plate.

U. S. Letters Patent No. 387,399, granted August 7, 1888, to A. Cote, for railroad chair.

U. S. Letters Patent No. 388,240, granted August 21, 1888, to E. H. Ashcroft for construction of railroads.

U. S. Letters Patent No. 421,678, granted February 18, 1890, to F. A. Davies, for wear plate, for railroad rail ties.

U. S. Letters Patent No. 426,530, granted April 29, 1890, to W. Goldie, for railroad rail chair.

U. S. Letters Patent No. 457,584, granted August 11, 1891, to W. Goldie for railroad tieplate.

U. S. Letters Patent No. 457,585, granted August 11, 1891, to W. Goldie, for railroad rail brace.

U. S. Letters Patent No. 462,357, granted November 3, 1891, to W. Kennish, for protector for the ends of beams.

U. S. Letters Patent No. 462,399 granted November 3, 1891, to P. C. Dockstader, for lock rail joint.

U. S. Letters Patent No. 465,492 granted December 22, 1891, to F. W. Parsons for railway chair.

U. S. Letters Patent No. 469,386, granted February 23, 1892, to C. H. Dunham, deceased, for railroad tieplate.

U. S. Letters Patent No. 474,129 granted May 3, 1892, to F. H. Heath, for rail joint.

U. S. Letters Patent No. 481,171, granted August 23, 1892, to U. H. Bane for railroad joint.

U. S. Letters Patent No. 485,030, granted October 25, 1892, to W. Goldie, for tieplate.

U. S. Letters Patent No. 488,662, granted December 27, 1892, to B. Reece for wear plate for railway ties.

U. S. Letters Patent No. 492,528, granted February 28, 1893, to J. Churchward for wear plate.

U. S. Letters Patent No. 494,692, granted April 4, 1893, to B. Reece, for method of making railroad tieplates.

U. S. Letters Patent No. 495,807, granted April 18, 1893, to W. W. Holmes for railroad tie-plate.

U. S. Letters Patent No. 506,963 granted October 17, 1893, to W. W. Worthington for method of making railroad tie-plates.

U. S. Letters Patent No. 508,086, granted November 7, 1893, to J. Churchward for wear plate.

40 U. S. Letters Patent No. 514,465, granted February 13, 1894, to W. W. Holmes for railway tieplate.

U. S. Letters Patent No. 514,466, granted February 13, 1894, to W. W. Holmes for railway tieplates.

U. S. Letters Patent No. 514,467, granted February 13, 1894, to W. W. Holmes for railway tieplate and method of making same.

U. S. Letters Patent No. 514,828, granted February 13, 1894, to J. A. Harris for tieplate for railway tracks.

U. S. Letters Patent No. 522,867, granted July 10, 1894, to W. H. Wilson, for railroad tieplate.

U. S. Letters Patent No. 524,868, granted August 21, 1894, to D. Servis, for railway tieplate.

U. S. Letters Patent No. 529,854, granted November 27, 1894, to S. F. Clark, for tie plate.

U. S. Letters Patent No. 530,175, granted December 4, 1894, to T. R. Gabel, for combined tieplate and rail brace.

U. S. Letters Patent No. 530,738, granted December 11, 1894, to B. Wolhaupter, for railway tieplate.

U. S. Letters Patent No. 531,637, granted January 1, 1895, to R. Morrell, for tie or wear plate.

U. S. Letters Patent No. 535,963, granted March 19, 1895, to J. T. Stewart for railway tieplate.

U. S. Letters Patent, No. 538,808, granted May 7, 1895, to B. Wolhaupter, for tieplate.

U. S. Letters Patent No. 538,817, granted May 7, 1895, to W. H. Chamberlain, for tieplate.

U. S. Letters Patent No. 540,356, granted June 4, 1895, to W. Goldie, for tieplate.

U. S. Letters Patent No. 541,984, granted July 2, 1895, to B. Reece, for railroad tieplate.

U. S. Letters Patent No. 542,352, granted July 9, 1895, to C. F. Quincy, for combined tieplate and rail brace.

U. S. Letters Patent No. 542,787, granted July 16, 1895, to B. Wolhaupter, for tieplate.

U. S. Letters Patent No. 566,828, granted September 1, 1896, to T. S. Weed, for tieguard or plate.

U. S. Letters Patent No. 573,543, granted December 22, 1896, to M. Sellers, for tieplate.

U. S. Letters Patent No. 574,773, granted January 5, 1897, to H. W. Avery, for railway tieplate.

U. S. Letters Patent No. 579,509, granted March 23, 1897, to B. Wolhaupter for railway tieplate.

41 U. S. Letters Patent No. 584,248, granted June 8, 1897, to I. F. Tillinghast, for track fastening.

U. S. Letters Patent No. 584,603, granted June 15, 1897, to J. T. Richards for railroad chair or tieplate.

U. S. Letters Patent No. 592,865, granted November 2, 1897, to J. W. Cloud for rail joint.

U. S. Letters Patent No. 603,563, granted May 3, 1898, to A. B. B. Harris, for gauge adjusting tieplate.

U. S. Letters Patent No. 610,179, granted September 6, 1898, to W. Goldie, for tie plate.

U. S. Letters Patent No. 622,965, granted April 11, 1899, to A. Morrison, for tie plate.

U. S. Letters Patent No. 631,039, granted August 15, 1899, to W. Goldie, for tie plate.

U. S. Letters Patent No. 631,873, granted August 29, 1899, to G. K. Kinney and S. L. Trueblood, for railway tie plate.

U. S. Letters Patent No. 636,982, granted November 14, 1899, to B. Wolhaupter, for railway tie plate.

U. S. Letters Patent No. 636,982, granted November 14, 1899, to W. C. Hanna Jr. for beam shoe.

U. S. Letters Patent No. 649,629, granted May 15, 1900, to R. B. Charlton, for railway tie plate.

U. S. Letters Patent No. 662,850, granted November 27, 1900, to H. W. Avery, for tie plate.

U. S. Letters Patent No. 684,466, granted October 15, 1901, to J. M. Sellers, for tie plate.

U. S. Letters Patent No. 691,037, granted January 14, 1902, to B. Wolhaupter, for rail joint.

U. S. Letters Patent No. 691,317, granted January 14, 1902, to W. S. Jones for railway tie plate.

U. S. Letters Patent No. 696,964, granted April 8, 1902, to H. H. Hart, for tie plate.

U. S. Letters Patent No. 700,714, granted May 20, 1902, to F. C. Anderson, for railway rail joint.

And in the following printed publications:

The Railway Gazette, published in Chicago, Illinois, in 1890.

The Railroad Gazette, published in Chicago, Illinois, in July, 1892, and November 11, 1892, and on December 30, 1898.

The Railway Age and Northwestern Railroader, published in Chicago, Illinois, on August 6, 1892.

The Railway Age published in Chicago, Illinois, on December 23, 1892, and on January 18, 1898.

42 And by a prior use by the Atchison, Topeka & Santa Fe Railroad Company on its Railroad in the State of Colorado, and in the territories of New Mexico and Arizona.

And in divers other Letters Patent, printed publications and prior uses, to these defendants at present unknown, but which, when discovered, they pray may be referred to and said references added to and made a part of this, their answer.

VIII. And these defendants, further answering, aver that in view of the state of the art at and prior to the date of the alleged inventions, described and claimed in the said Wolhaupter patents, it required no skill to produce the said alleged improvements and invention, but merely the ordinary mechanical skill and judgment of a person versed in the art at such time, and that the subject matter of the said Wolhaupter patents was not patentable within the meaning of the law and not proper subject matter for Letters

Patent of the United States: Wherefore the said Wolhaupter patents are null and void, and in proof of such prior state of the art these defendants refer (inter alia) to, and hereby make a part of this specification of their answer, the several Letters Patent hereinbefore recited in Paragraph VII, of this answer.

IX. And these defendants further answering, aver that the alleged invention described and claimed in the said several Letters Patent recited in the Bill of Complaint herein has been in public use or on sale in the United States for more than two years prior to the filing of the applications for the said several Letters Patent therefor and that therefore the said several Letters Patent are null and void and of no effect in law, and in proof thereof these defendants refer (inter alia) to, and hereby make a part of this specification of their answer the several Letters Patent recited in Paragraph VII of this answer.

X. These defendants aver that the complainant has no right to any other or further answer to said Bill of Complaint, or any part thereof, than is hereinbefore contained, and has no right to any accounting, discovery, injunction, decree or other relief prayed for in said Bill, without this that any other matter, cause or thing in the said Complainant's Bill of Complaint contained material or necessary to be answered by these defendants, and not herein and hereby well and sufficiently answered unto, confessed and
43 avoided, traversed or denied, is true to the best of the knowledge and belief of these defendants, all of which matters and things these defendants are ready and willing to aver, maintain and prove as this Honorable Court may direct. And it is further denied that Complainant is entitled to the relief prayed for in said bill of complaint or any part thereof. To the interrogatory the defendants answer, "yes, sold." And these defendants humbly pray to be hence dismissed with their reasonable costs and charges in this behalf most wrongfully sustained.

THE HART STEEL COMPANY,
By W. S. MILLER, *President;*
GUILFORD S. WOOD, *Defendants.*

FRANK F. REED &
EDWARD S. ROGERS,
JAMES NEGLEY COOKE,
Solicitors for Defendants.

STATE OF ILLINOIS,
County of Cook, ss:

W. S. Miller and Guilford S. Wood, being each duly sworn, on oath depose and say that said W. S. Miller is the President of the Hart Steel Company, one of the defendants in the above and foregoing suit, and makes this affidavit for and on behalf of said defendant, the Hart Steel Company; that Guilford S. Wood, one of the defendants in the above and foregoing suit, makes this affidavit on behalf of himself and of said defendant, the Hart Steel Company, and each depose and say that the answer above set forth to the first interrogatory in said bill of complaint propounded, and therein and

thereby required to be answered under oath, is true, as in the above answer above set forth.

And further affiants say not.

W. S. MILLER.
GUILFORD S. WOOD.

Subscribed and sworn to before me, this 22 day of January, A. D. 1909.

[SEAL.] MARGARET SHEALY,
Notary Public.

(Indorsed:) Filed March 3, 1909. H. S. Stoddard, Clerk.

44 In the Circuit Court of the United States, Northern District of Illinois, Eastern Division, Thursday, May 11th, 1911.

Present: Honorable Christian C. Kohlsaat, Circuit Judge.

Chancery. 29294.

RAILROAD SUPPLY COMPANY
vs.
HART STEEL COMPANY and GUILFORD S. WOOD.

Upon motion of the defendants and upon stipulation of the parties this day filed herein, It Is Ordered by the Court that leave be and the same is hereby granted said defendants to amend their answer, heretofore filed herein, instanter; and that the amendment to such answer may be filed nunc pro tunc as at the close of defendants' testimony. It Is Further Ordered that the replication, heretofore filed herein, shall stand to the answer as amended.

In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

In Equity. No. 29294.

RAILROAD SUPPLY COMPANY, Complainant,
v.
HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

It is stipulated by and between the parties to the above entitled suit that an order may be entered therein allowing the defendants to amend the answer heretofore filed instanter, and that the following amendment to such answer may be filed nunc pro tunc
45 as at the close of the defendants' testimony, and that the replication heretofore filed shall stand to the answer, as amended, and that an order to the above effect may be entered without further notice.

Dated: May 3, 1911.

TAYLOR A. BROWNE,
Solicitor for Complainant.
FRANK F. REED,
Solicitor for Defendants.

In the Circuit Court of the United States in and for the Eastern Division of the Northern District of Illinois.

Number 29294. In Equity.

RAILROAD SUPPLY COMPANY, Complainant,
v.
HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

The said defendants, by leave of Court in that behalf first had and obtained, hereby amend their answer in the above entitled suit by inserting in paragraph VII. of said answer after the words "United States Letters Patent No. 700,714, granted May 20, 1902 to S. C. Anderson for railway joint," the following:

Letters Patent to C. B. Sheldon for joint support of street railway rails, No. 164,766, dated June 22, 1875.

Letters Patent to D. S. Whittenhall, railroad ties, No. 185,808, dated December 26, 1866.

Letters Patent to W. Goldie for railway chair or fastening, No. 356,760, dated February 1, 1887.

Letters patent of E. H. Ashcroft, for construction of railroads, No. 388,240, dated August 21, 1888.

The Railroad Gazette, published in Chicago, Illinois, Vol. 22, 1890, issue of June 6, 1890, pages 398 and 399, being the article headed "Experimental tieplates, Pennsylvania Railroad," on page 398, and cuts in connection therewith on page 399.

The Railroad Gazette, published in Chicago, Illinois. Issue of March 25, 1892, page 221 and page 507.

46 The Railroad Gazette, published in Chicago, Illinois, on November 11, 1892, page 889 of said issue. Article entitled "The Goldie Tie Plates" and cuts connected therewith.

The Railroad Gazette, published in Chicago, Illinois, on March 8, 1889, the article entitled "The Elastic Tie Plate," beginning on page 160 of the issue of March 8, 1889.

The Railroad Gazette, published in Chicago, Illinois, April 5, 1889. The article entitled "The Elastic Tie Plate, etc." beginning on page 221 of said issue.

The Railway Age and Northwestern Railroader, published in Chicago, Illinois, on August 5, 1892. The article entitled "Car Tie Protector Plate" commencing on page 613 of said issue.

Railway Age and Northwestern Railroader, published in Chicago, Illinois, on January 13, 1893. The cut styled "Combined Tie Plate and Brace" and the paragraph referring thereto commencing on page 32 of said issue.

The Railway Age and Northwestern Railroader, published in Chicago, Illinois, on May 12, 1893, the article beginning on page 384 of said issue entitled "The Servis Combination Tie Plate."

Railroad Gazette, published in Chicago, Illinois, on December 30, 1898, the paragraph headed "The Glendon Tie Plate" and cut shown therein in said issue, page 934 thereof.

The Railroad Gazette, published in Chicago, Illinois, on January 1st, 1887, the article beginning on page 630 thereof entitled "The post bearing plates for rails" and cuts in connection therewith.

The German publication "Das Eisenbahn-Geleiss von A. Haarmann, General Direktor des Georges-Marien-Bergwerks und Huetten-Vereins. Geschichtlicher Theil. Mit 1837 in den Text Gedruckten Holzschnitten. Erste Haelfte. Leipsic" the same being published at Leipsic, Germany, in 1891. The text on page 279 and the cuts or figures numbered 634 and 635 and the text on pages 289 and 290 of said issue and numbered 661 and 662 in connection therewith, and further by inserting in said paragraph VII after the words "and in the Territories of New Mexico and Arizona," the following:

Used by the Pittsburgh and Lake Erie Railroad Company on its lines of railroad in Ohio and Pennsylvania during the years 1892 and 1893.

Used by the Pen-sylvania Railroad Company on its lines
47 of road in Pennsylvania and specifically at the crossing of the Pennsylvania Railroad track over Liberty Street in the City of Pittsburgh, Pennsylvania in the years 1892 and 1893.

Manufactured and sold by Dilworth Porter & Company at the City of Pittsburgh, Pennsylvania in the years 1892, 1893 and 1894 and distributed to various lines in the United States.

Used by the Boston and Maine Railroad Company on the lines of its road in Massachusetts in the years 1892 and 1893.

Used by the Old Colony Railroad Company on its lines of road in Massachusetts and elsewhere in the years 1892 and 1893.

Used by the Baltimore & Ohio Railroad Company on its lines of road in Maryland, Virginia and elsewhere in the years 1892 and 1893.

Used in the years 1892 and 1893 by the following railroad companies upon their lines of railroad:

Portland & Rumford Falls R. R.
Old Colony R. R.
Atchison, Topeka & Santa Fe R. R.
Central of Vermont.
Fall Brook R. R.
Louisville & Nashville R. R.
Kansas City, St. Joe & Council Bluffs.
Chicago, Burlington & Quincy.
Peoria & Pekin Union.
Burlington & Missouri River R. R. in Nebraska.
Boston & Maine R. R.
Chicago, Milwaukee & St. Paul R. R.
Moshassuck Valley R. R.
Toledo & Ohio Central R. R.
New York, New Haven & Hartford R. R.
Houston & Texas Central.
Cincinnati, Hamilton & Dayton R. R.
Hannibal & St. Joseph R. R.
Chicago & Northwestern Ry.
Allegheny Valley Ry.

St. Louis, Merchants Bridge Terminal Ry.
Chicago, Rock Island & Pacific.
Long Island R. R.
Union Pacific R. R.
Pittsburgh, Shenango & Lake Erie R. R.
Hunter's Run & Slate Belt R. R.
Pennsylvania R. R.
48 Wilkes-Barre & Eastern R. R.
Cincinnati & Westwood R. R.
Chesapeake & Ohio R. R.
Cleveland, Loraine & Wheeling Ry.
Missouri Pacific Ry.
Flint & Pierre Marquette R. R.
Kentucky & Indiana Bridge & R. R. Co.
St. Paul & Duluth R. R.
Central of New Jersey R. R.
Union Pacific, Denver & Gulf.
Boston, Revere Beach & Lynn R. R.
Butte, An-conda & Pacific.
Kansas City, Ft. Scott & Memphis.
Elgin, Joliet & Eastern R. R.
Missouri, Kansas & Texas Ry.
Cincinnati, New Orleans & Texas Pacific Ry.
International & Great Northern Ry.
Baltimore & Ohio R. R.
Pittsburgh, Cincinnati, Chicago & St. Louis Ry.
Leavenworth, Topeka & Southwestern Ry.
Choctaw, Oklahoma & Gulf Ry.

and defendants ask that they be allowed the same benefit and advantage of said averments so inserted as though incorporated in the original answer, and that said suit may be dismissed at complainant's costs, etc.

FRANK F. REED,
Solicitor for Defendants.

49 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

Replication.

The Replication of The Railroad Supply Company, Complainant, to the Answer of The Hart Steel Company and Guilford S. Wood, Defendants.

This repliant saving and reserving unto itself, now and at all time hereafter, all and all manner of benefit and advantage of exception which may be had or taken to the manifold insufficiencies of the said answer, for replication thereto, says that it will aver, maintain and prove its bill of complaint to be true, pertinent and sufficient in law to be answered unto and that the said answer of the said defendants is uncertain, untrue and insufficient to be replied unto by this repliant. Without this, that any other matter or thing whatsoever in said answer contained, material or effectual in the law to be replied unto, and not herein and hereby well and sufficiently replied unto, confessed or avoided, traversed or denied is true; all which matters and things this repliant is and will be ready to aver, maintain
50 and prove as this Honorable court shall direct, and humbly praying as in and by its said bill of complaint it has already prayed.

Chicago, Illinois, March 25th, 1909.

POOLE & BROWN,
Solicitors for Complainant.

C. CLARENCE POOLE,
TAYLOR E. BROWN,
Of Counsel.

Endorsed: Filed March 25, 1909. H. S. Stoddard, Clerk.

51 In the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

Notice for the Examination of Witnesses De Bene Esse.

To Frank F. Reed, Esq., Edward S. Rogers, Esq., J. Negley Cook, Esq., Solicitors for Defendants, Rector Building, Chicago, Ill.

DEAR SIRS: You will please take notice that, beginning at ten (10) o'clock in the forenoon on Thursday, May 20, 1909, before G. R. Wilkins, notary public in and for Cook county, Illinois, or other competent officer, at the offices of Messrs. Poole & Brown, 808 Marquette building, Chicago, Illinois, we shall take the depositions de bene esse of Henry S. Hawley, John Howard McElroy, E. H. Bell, and David S. Wegg, each of whom resides in Chicago, Cook county, Illinois, and Benjamin Wolhaupter, who resides in New York City, New York, more than one hundred miles from Cleve-
land, Ohio, where the court at which the above entitled cause
52 will be tried, is appointed by law to be held; the depositions so taken to be read in evidence at the final hearing and trial of said cause on behalf of the complainant.

The taking of these proofs will be continued from day to day until completed.

You are invited to be present and cross-examine the witnesses orally if you so desire.

Chicago, Illinois, May 14, 1909.

POOLE & BROWN,
Solicitors for Complainant.

The foregoing notice is acknowledged and copy thereof received before five o'clock this 14th day of May, 1909, at Chicago, Illinois.

FRANK F. REED,
EDWARD S. ROGERS AND
J. NEGLEY COOKE,
Per F. F. R.,
Solicitors for Defendants.

53 In the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

Prima Facie Proofs.

Testimony taken and other due proceedings had on behalf of the complainant in the above entitled cause, pursuant to the notice hereunto affixed, and by agreement of counsel, at the office of Poole & Brown, 808 Marquette building, Chicago, Illinois, before me, George R. Wilkins, Notary Public, in and for Cook county, Illinois, acting by agreement of counsel as special examiner, beginning at ten o'clock in the forenoon this 20th day of May, 1909.

Present:

Taylor E. Brown, Esq., on behalf of complainant.
Edward S. Rogers, Esq., on behalf of defendants.

And thereupon the following stipulations were entered into by the agreement of the solicitors for the respective parties, to-wit:

54 *Stipulation.*

1. It is hereby stipulated and agreed that depositions may be taken and proofs adduced by either party in this cause before any notary public or other competent officer having a seal, and that the proofs so adduced may be used in evidence with the same force and effect as though taken before a standing or special examiner of this court.

2. It is further agreed that the ordinary printed, uncertified copies of United States and foreign letters-patent, as customarily issued by the respective Patent offices, may be used in evidence herein with the same force and effect as though certified by the proper authorities, such copies to be subject to the usual objections as to incompetency, materiality, etc., and subject to be corrected at any time for typographical errors by the production of a duly authenticated copy of such patent.

3. It is further agreed that all exhibits and models introduced in evidence or identified with this cause may be retained in the custody or control of counsel offering the same until the final hearing of the case, when said exhibits and models are to be produced in court; the said exhibits and models to be produced in court for any interlocutory hearing upon due notice, and also to be subject to inspection

pposing counsel and his duly authorized representative at all
nable times.

It is further agreed that a clear and legible copy of all proofs
ed and proceedings taken herein by either party, and also
practicable a copy or duplicate of the exhibits introduced, shall
rnished to opposing counsel free of charge by counsel offering
or introducing the same at the close of each day's session.

5. It is further agreed that the records and proofs of the
respective parties shall be printed in time for the hearing of
ause in this court and that the costs for such printing by the
iling party shall be taxable as costs in the case against the los-
arty.

It is further stipulated that in printing the record for the hear
this court, each party will, as near as possible, conform to the
for printing records now in force in the United States Circuit
of Appeals for the Seventh Circuit in order that the record so
ed may be used on appeal without the expense of reprinting.

It is further stipulated and agreed that each party will print,
cess of the number of printed copies required for use in this
, thirty-five copies of the record for his side, and that the pre-
g party in the Circuit Court shall deliver, upon request of the
g party, to the counsel for the losing party the said thirty-five
copies of printed record of the prevailing party, free of cost and
e to said losing party, for the use of the losing party in making
e record of the Circuit Court of Appeals in the event of an ap-
being taken by said losing party.

It is further agreed, for the purpose of saving expense in the
ing of records in this cause, that exhibits introduced upon more
one occasion throughout the taking of the proofs, and which
its are to be reproduced in the record, shall not be duplicated
ded, however, that proper references or cross-references shall be
in the printed record to the different introductions or different
which may be given to the same exhibits.

hereupon, upon request of solicitor for defendants, an adjourn-
is now taken until Monday morning, June 7, 1909, at ten (10)
ck.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, June 7, 1909.

et pursuant to adjournment.

resent: Taylor E. Brown, on behalf of complainant.

r. Brown: The following telegram has been received from J.
ey Cooke, Esq., attorney for defendants:

ole & Brown, Marquett Bldg., Chg.:

an you arrange for the ninth or tenth to suit me.

J. N. COOKE."

And thereupon at the request of counsel for defendants an adjournment is taken until Wednesday, June 9, 1909, at 10 A. M.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, June 9, 1909.

Met pursuant to adjournment.

Present: Taylor E. Brown, Esq., solicitor for complainant; J. Negley Cooke, Esq. and Frank F. Reed, Esq., solicitors for defendants.

Counsel for complainant introduces in evidence Wolhaupter Patent No. 538,809, for Improvements in Tie-Plates dated May 7, 1895, and the same is identified with this record as "Complainant's Exhibit No. 1, Wolhaupter Patent No. 538,809." (See p. 16.)

Also Wolhaupter Patent No. 691,332, for Railway Tie-
57 Plates dated January 14, 1902, and the same is identified as "Complainant's Exhibit No. 2, No. 691,332." (See p. 16.)

Also Wolhaupter Patent No. 721,644, for improvements in Tie-Plates dated February 24, 1903, and the same is identified as "Complainant's Exhibit No. 3, Wolhaupter Patent No. 721,644." (See p. 16.)

Complainant's counsel also introduces in evidence certified copy of the records from the Secretary of the State of Illinois of the Articles of Incorporation of the Railroad Supply Company under the hand of the Secretary of State dated May 14, 1909, and under the seal of the State of Illinois, and the same is identified as "Complainant's Exhibit No. 4, Charter and Articles of Incorporation Railroad Supply Company." (See back of book.)

Complainant's counsel offers in evidence certified copies from the records of the Patent Office of the Assignment and Instrument of Writing executed by Benjamin Wolhaupter July 25, 1898, and recorded February 16, 1900, in Liber T-60, page 323, conveying to David S. Wegg of Chicago entire interest in Wolhaupter tie-plate patent No. 538,809, of May 7, 1895, and of Wolhaupter application for tie-plate filed in the Patent Office May 3, 1897, Serial No. 634,890, and the same is identified with this record as "Complainant's Exhibit No. 5, Wolhaupter Assignments." (See back of book.)

Complainant's solicitor also introduces in evidence certified copy of an Instrument of Writing executed by David S. Wegg December 30, 1898, and recorded on February 8, 1899, in Liber Q-59, page 71, conveying to the Q. & W. Company the Wolhaupter patent No.
538,809 of May 7, 1895, for improvements in tie-plates and
58 Wolhaupter application for patent for Railway Tie-Plates Serial No. 634,890, filed in the Patent Office May 3, 1897, and the same is identified as "Complainant's Exhibit No. 6, Wegg Assignments Wolhaupter patents." (See back of book.)

Also an Instrument of Writing certified by the Commissioner of Patents executed by Q. & W. Company October 9, 1908, and recorded October 22, 1908, in Liber F-80, page 164, conveying the Wolhaupter letters-patent No. 538,809 of May 7, 1895, to the com-

lainant the Railroad Supply Company and the same is identified s "Complainant's Exhibit No. 7, Q. & W. Assignment, Wolhaupter 'atent No. 538,809." (See back of book.)

Certified copies from the records of the Patent Office of the face f the file wrapper in the matter of letters-patent to Benjamin Wolıaupter No. 691,332 granted January 14, 1902, for improvements n railway tie-plates showing on first sheet that the serial number of he application was No. 634,890, that the application was filed May , 1897, was forfeited, and was refiled November 9, 1901; and showng on sheet 2 that the renewal serial number of said application was 1,780, as set forth in the Wolhaupter patent, "Complainant's Exıibit No. 2," and the same is marked "Complainant's Exhibit No. 8, 'ace of File Wrapper Wolhaupter Patent 691,332." (See back of ook.)

Certified copy of an Instrument of Assignment executed by the Q. & W. Company October 22, 1908, recorded in the Patent Office October 29, 1908, in Liber G-80, page 101, conveying Wolhaupter etters-patent No. 691,332 of January 14, 1902, to the complainant, The Railroad Supply Company, and the same is marked "Complainınt's Exhibit No. 9, Q. & W. Assignment, Wolhaupter Patent 691,-332." (See back of book.)

59 Certified copy of an Instrument of Writing executed by Benjamin Wolhaupter November 10, 1908, recorded in the Patent Office November 27, 1908, in Liber F-80, page 358, conveying letters-patent No. 721,644, dated February 24, 1903, to the complainant, The Railroad Supply Company, and the same is marked "Complainant's Exhibit No. 10, Wolhaupter Assignment Patent No. 721,544." (See back of book.)

And thereupon HENRY S. HAWLEY, a witness produced on behalf of the complainant, having been first duly cautioned and sworn, upon oath, testifies as *as* follows in answer to interrogatories by Mr. Brown:

Q. 1. Please state your name, age, residence and occupation?

A. Henry S. Hawley, 58 years old, residence 5845 Madison avenue, occupation President and Treasurer The Railroad Supply Company, Bedford building, Chicago, Illinois.

Q. 2. How long have you been connected with the complainant, The Railroad Supply Company?

A. I was elected President and Treasurer May 19, 1902, and took charge of the business on that date.

Q. 3. State whether or not the complainant is incorporated and if so under the laws of what state? and, as near as you remember, the date of incorporation?

A. Incorporated 1895 under the laws of the State of Illinois.

Q. 4. Please look at "Complainant's Exhibit No. 4," Certified Copy of the Articles of Incorporation of The Railroad Supply Company, and state whether or not you recognize the same as a copy of the Charter and Articles of Incorporation of the complainant-company?

A. This is a certified copy of the Articles of Incorporation of The

Railroad Supply Company dated May 14, 1909. The company was incorporated on the 19th day of March, 1895, at Springfield, Illinois. I have the charter at my office in my custody.

60

Q. 5. Please state the nature, character of the business of the complainant-company, and where its products are manufactured?

A. The Railroad Supply Company manufactures and sells railroad supplies, electrical supplies and track devices. Its ownership of patents covering practically all the railroad supplies and devices manufactured for them or by them and sold to its customers. It has arrangements for the manufacture of track devices, specially tie-plates, with rolling mills located at Joliet, Illinois, Milwaukee, Wis. and other points of the Illinois Steel Company, also with mills located at Pittsburg, Pa., Buffalo, N. Y., and Steelton, Pa.

In addition to the above it has a factory located in Carroll avenue in the City of Chicago, where it manufactures signal and electrical devices, including a machine shop where it manufactures the entire or completes the manufacture of other track devices. By other track devices, I mean tie-plates, derailers, etc. It maintains practically in every railroad center of the United States agencies for the sale and introduction of its devices.

It maintains offices in San Francisco, Cal.; Denver, Colo.; St. Louis, Mo.; and New York City. The general offices are at Chicago, from which point general sales agents travel and sell its devices; it has a staff of experts making their headquarters in Chicago, consisting of men versed in railroad track construction, manufacturing, engineering, draftsmen, etc.

Q. 6. Please look at "Complainant's Exhibits Nos. 1, 2 and 3," Wolhaupter patents in suit, and state whether or not the complainant owns these patents and whether or not it is manufacturing and selling tie-plates such as are described and claimed therein?

61

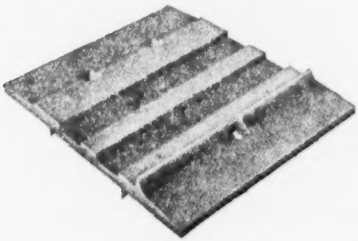
A. The Railroad Supply Company is the owner of the patents referred to and it has and does manufacture and sell the forms of tie-plates described therein and has done so for several years.

Q. 7. Please produce an illustration or representation of the tie-plate manufactured under the Walhaupter patents in suit by the complainant.

A. I would like to introduce a drawing or sketch of our standard corrugated top, flat bottom tie-plate our number 21*a*. This is a photograph and shows accurately this type of plate, which was first introduced, manufactured and sold by this company. We have also manufactured and sold in large numbers a plate which is known as our number 24, which is another form of a corrugated top, flat bottom tie-plate sold in large quantities, especially to the Santa Fe Railroad. Also a corrugated top, plate with two ribs on the bottom surface our number 64 which was the tie-plate first manufactured by The Railroad Supply Company, which we claim was copied verbatim, manufactured and sold by the defendants.

"Exhibit No. 12," Illustration Complainant's Tie-Plate.

62



"Exhibit No. 14," Complainant's Tie-Plate.

By Mr. Brown: The three half-tone illustrations just referred to by the witness, are now offered in evidence as exhibits, the same to be marked respectively "Complainant's Exhibit No. 12, Illustration, Complainant's Tie-Plate, Complainant's Exhibit No. 13, Illustration Complainant's Tie-Plate and Complainant's Exhibit No. 14, Illustration Complainant's Tie-Plate."

Q. 8. Please look at the tie-plate which I now show to you and state if you know what it is.

A. The tie-plate was manufactured by the Elyria Iron & Steel Company, is an exact duplicate of the tie-plate manufactured by The Railroad Supply Company illustrated in Exhibit No. 14, and sold by the Hart Steel Co. to the Santa Fe Railroad.

Q. 9. Please look at the photograph marked "Exhibit D to bill of complaint," and state what it is.

A. This is a photograph of that identical plate, showing the upper surface and the lower surface.

By Mr Brown: The tie-plate identified by the witness is introduced in evidence as "Complainant's Exhibit No. 15, Defendant's Infringing Tie-Plate," and the photograph identified by the witness, and copy of which is attached as Exhibit D to the bill of complaint, is introduced in evidence as "Complainant's Exhibit No. 16, Photograph Defendant's Tie-Plate."

(Here follows diagram marked pages 63 and 64.)

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

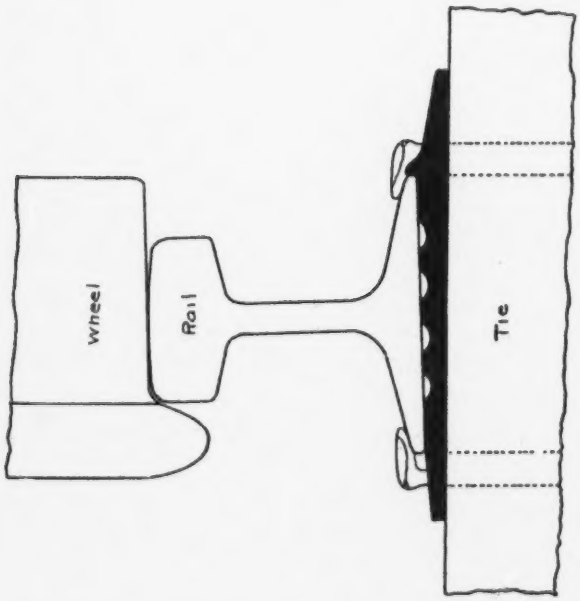
--***--

THE RAILROAD SUPPLY COMPANY :
v.)
THE HART STEEL COMPANY and : No. 29,294.
GUILFORD S. WOOD)

"Complainant's Exhibit No. 13, Illustration Complainant's Tie Plate".

June 9th, 1909.

Notary Public.



65 By Mr. Cooke: The offer of these two exhibits is objected to until proper identification is made of the same.

By Mr. Brown: The attention of the court is here directed to the bill of complaint herein, to interrogatory 1, following paragraph 19 thereof, to Exhibit D, photograph of the tie-plate referred to attached to said bill of complaint and to the Answer, under oath, of the defendants herein to the said interrogatory.

(See p. 14.)

Q. 10. What railroads, if more than one, use the tie-plates, such as are illustrated in "Complainant's Exhibits 15 and 16"?

A. Atchison, Topeka and Santa Fe System.

Q. 11. I notice in the three illustrations, "Complainant's Exhibits Nos. 12, 13 and 14" that each of the tie-plates shown therein has corrugations in its top and I ask you to state whether or not this is a characteristic feature of the Wolhaupter tie-plate?

By Mr. Cooke: Objected to as leading.

A. It is.

Q. 12. Mr. Hawley please state as fully as you may desire what is the extent of the business of the complainant-company in tie-plates of the Wolhaupter pattern, that is, having corrupated tops?

A. Well up to December 31, 1908, The Railroad Supply Company have sold a hundred and forty three million [143,000,000], tie-plates having corrugations on the upper surface which we claim are covered by Wolhaupter's patents. The introduction of the corrugated top tie-plates had a great deal to do with the development of the tie-plate industry.

66 There were no corrugated top tie-plates manufactured or sold or used prior to the year 1895.

When this type of plate was introduced, which was in the year 1895, there was a great increase in the tie-plate business. The records of The Railroad Supply Company show that they were the first company to manufacture and sell tie-plates with corrugated tops. The business grew from an annual production in 1895 of about three hundred thousand [300,000] plates up to approximately twenty-four million [24,000,000], per annum. The Railroad Supply Company and its predecessors, the Q. & C. Company, prior to the introduction of the Wolhaupter corrugated top plate, sold plates having a flat top surface.

The corrugated plate rapidly superceded the flat top plate and the records of our company show that over seventy-seven per cent [77%], of our total business in tie-plates has been of the corrugated top feature. The gross sales of both types of plates being about one hundred and eighty-eight million [188,000,000], seventy-seven per cent [77%] of them being of the corrupated top type.

Q. 13. To whom does The Railroad Supply Company sell tie-plates?

A. It would be easy to answer that question by asking what railroads we don't sell to. We have on our books at one time or another practically every steam railroad in the United States, Canada and

Mexico. We have on our books six hundred or eight hundred accounts each month. The accounts vary, the same railroads not always appearing from month to month. Other railroads take the place of those that don't appear.

67 Our tie-plates are standard on most of the large railroad systems in this country. By standard I mean that our tie-plates are specified by the engineering department for use on their roads.

Q. 14. I suppose that there is some difference between selling a tie-plate to a big organization like a railroad and in selling an ordinary manufactured article to the jobbing trade, and if I am right I wish you would explain for the benefit of the court something of the difficulty or process of selling a tie-plate to a railroad.

By Mr. Cooke: Objected to as leading and immaterial.

A. Well there are so many conditions existing on a railroad, specially in the method of track construction and the character of the ties used that it is necessary to have different designs and types of tie-plates to meet varying conditions. The size of the rail used generally determines the size of the plate. The character of the tie used on various divisions is also a factor in the proper form of tie-plate thus adopted for use on particular ties.

The Railroad Supply Company, as I have stated, maintains an organization with respect to engineers, etc., who make a specialty of designing and suggesting what we believe to be the proper type of plate used to meet the special conditions. There is hardly a day passes but what we are called upon by Engineers and Maintenance of Way officials to give suggestions as to these matters. We have some men in our employ whose business it is to go over with and confer with the Road Masters regarding their requirements, or rather the requirements of the road as to track supports, fastenings, etc.

We have made a specialty of this business and prior to work
68 of this nature many of the railroads looked upon a tie-plate as a luxury. Today these same railroads not only look upon them but admit they are a necessity. This preliminary work of our inspectors, etc., is followed up by our salesmen who negotiate with the proper officials for the sale to them of tie-plates.

Q. 15. I notice from the "Complainant's Exhibit No. 4, Articles of Incorporation" that the capital stock of the complainant company is stated to be one thousand dollars, and I ask you whether or not the complainant has had occasion to increase its capital stock and if so, when and to what extent?

By Mr. Cooke: Objection repeated.

A. The capital stock of The Railroad Supply Company was increased to five hundred thousand dollars in the fall of 1905, I can't remember the date. I have submitted to you a certified copy from the Secretary of State showing a certificate for the increase of the capital stock which was filed on the 26th day of October, 1905.

By Mr. Brown: The certificate of increase of capital stock by the

complainant corporation referred to by the witness is introduced in evidence as "Complainant's Exhibit No. 17, Certificate of Increase Capital Stock of Complainant-Corporation."

By Mr. Cooke: The offer is objected to as immaterial, irrelevant and incompetent.

Q. 16. State what facility the complainant has for supplying the demand of the trade and the normal expectation or increase of such demand, by way of manufacturing facilities and of resources, if it has any, in addition to its capital stock.

By Mr. Cooke: Same objection as leading.

A. As stated, we have contracts covering the total output of tie-plates manufactured for us at Pittsburgh, and also exclusively by mills located at Joliet, Ill., Milwaukee, Wis., Buffalo, N. Y.,
69 and Steelton, Pa. The capacity of any one of these mills at any one of the points named is equal to the capacity of any mill in the United States. We are enabled by these facilities to take care of any tonnage that can be offered. As an illustration, there are several railroad systems who buy tie-plates amounting to twenty-five to forty-five thousand tons per annum.

We frequently have orders for five thousand ton lots with requirements for delivery in thirty to sixty days. There are very few mills in the country, none outside of those we control, that could furnish one particular railroad five thousand tons of one particular plate in thirty days and be able to take care of their ordinary business. We have frequently had on our books orders for large tonnage and have had every mill with whom we have arrangements working on the same tonnage at the same time. The arrangements we have, as stated, put us in the position to handle large tonnage as well as to take care of the smaller orders that come in from day to day.

We have unlimited credit and have no difficulty whatever in financing any proposition that is put up to us. That is one of the reasons we have done such a prosperous business. It is safe to say, that we have for several years, we have done fully seventy per cent [70%] of the total business of the country entirely. We have invested large sums of money in patents and look upon them as one of our valuable assets.

Q. 17. Please state when and how you got the defendant's tie-plate marked and introduced in evidence here as "Complainant's Exhibit No. 15."

A. I received this tie-plate on the 4th day of October, 1908. It was rolled at the Elyria Iron Steel Company's mills at Elyria, Ohio, on or about the 2d day of October. It was one of a shipment that left Elyria on or about the 2d day of October. The plate was
70 shipped and addressed to me from Cleveland, Ohio, by a representative of this company. I had the plate photographed on its arrival, and submitted the plate and photograph to Poole & Brown.

Recess.

Q. 18. You say in your answer to Q. 17 that the tie-plate "Complainant's Exhibit No. 15" was rolled at Elyria, Ohio, and in answer to Q. 8 you state that the tie-plate manufactured by the Elyria Iron & Steel Co. was sold by the Hart Steel Co. to the Santa Fe Railroad. State, if you know, where the sale was made.

A. The sale was made in Chicago by the Hart Steel Co., represented by Mr. G. S. Wood.

Stipulation.

It is hereby stipulated by and between Solicitors for the respective parties that the tie-plate "Complainant's Exhibit No. 15, and others like it, was manufactured by the Elyria Iron & Steel Co., at Elyria, Ohio, in the Northern District of Ohio, and was sold by the Hart Steel Co. and Guilford S. Wood, at Chicago, Ill., in the Northern District of Illinois, after the date of the Wolhaupter patents in suit, "Complainant's Exhibits Nos. 1, 2 and 3" and prior to the date of the filing of the bill of complaint herein, and that further proof of such manufacture and sale is hereby waived.

Direct examination closed.

71 Cross-examination by Mr. J. N. Cooke; without waiver of objections.

XQ. 19. I call your attention to "Exhibit No. 12" and ask you to state when you first started to make tie-plates of this type and for whom?

A. In 1904 they were made for the Harriman Lines, etc., Union Pacific, Southern Pacific. That covered the other roads for that system.

X Q. 20. How long did you continue making this type of plate?

A. Ever since, and are making them now.

X Q. 21. About how many of this type of plate have you made?

A. We have made probably one hundred thousand tons.

X Q. 22. I call your attention to "Exhibit No. 13" and ask you to state when you first started to make this plate and for whom?

A. I think, but am not absolutely positive, but I think we made this plate in 1905, might have been the early part of 1906, and made especially for the Atchison, Topeka & Santa Fe Railway.

X Q. 23. How long did you continue to make this type of plate?

A. We manufactured this up to the fall of 1907, probably in January, 1908, I think about 1907 or the first month in 1908.

X Q. 24. About how many of this type of plate did you make?

A. I say about ten thousand tons. Can't tell you exactly, Mr. Cooke, but approximately.

X Q. 25. I call your attention to "Exhibit No. 14" and ask you to state when you started to make this type of plate and for whom?

72 A. I think the first plates we made of this type was in May, 1908, and made for the Atchison, Topeka & Santa Fe Railroad.

X Q. 26. How long did you continue to make this type of plate?

A. Manufactured them up to the present time and are manufacturing them now.

X Q. 27. How many plates of this type have you manufactured up to the present time?

A. About twenty thousand tons I think.

X Q. 28. How many of this type of plate did you manufacture prior to the filing of the bill in this case which was along in December 1908?

A. It would be impossible, Mr. Cooke, to give you the exact number. I can not approximate the tonnage of these plates. We manufactured two of them several months prior to the filing of this bill. I am under the impression that we rolled some of these plates in November, but I would like to look at the record to be positive on this subject.

X Q. 29. You have spoken of two of these plates. Do you mean to say that you made two styles of the same or one?

A. We made two plates exactly alike, same width, weight and thickness. These were manufactured and submitted to the Atchison, Topeka & Santa Fe Railroad.

X Q. 30. How were these plates manufactured, Mr. Hawley?

A. These plates were manufactured in the same manner and by the same process that we manufacture plates submitted for examination. We make a great many plates in the same way. We take a bar of steel, put them in our planer, cut out the grooves and ribs, punch the holes and, so far as the plate is concerned, it could be used for exactly the same purpose that any tie-plate is.

73 X Q. 31. Then I am to understand that prior to the filing of the bill in this case, you were experimenting with the style of the plate shown in "Exhibit No. 14"?

A. No, sir we were not. As I have already testified, we made thousands of tons of this tie-plate "Exhibit No. 12." The plate in controversy is practically the same as this plate with the exception that it has two ribs on the bottom. The Santa Fe desired a plate of certain width and thickness. They wanted two ribs on the bottom and I understood they desired to have this plate manufactured with ribs for testing purposes, which is frequently done.

X Q. 32. Then am I to understand that prior to the filing of the bill in this case, you did not have any orders for the style of plate shown in "Exhibit No. 14," but were simply making the same for the purpose of testing it?

A. It was manufactured and submitted, as I understood it, for testing and comparison with other plates, possibly to compare with the original plate "Exhibit No. 12."

X Q. 33. Now how many plates, Mr. Hawley, did you actually manufacture of "Exhibit No. 14" before the filing of the bill in this case?

A. I told you I could not tell you exactly, I know I manufactured two. I took orders for Mr. Hodges of the Santa Fe Railroad for twenty thousand tons of this plate before this bill was filed, according to my best recollection.

X Q. 34. Was that manufacture of two plates before or after the defendants manufactured and sold tie-plates like "Exhibit No. 15"?

A. It was before.

X Q. 35. Had you an order from the Santa Fe Company for plates like "Exhibit No. 14" at the time you first made these two plates?

74 A. We had no order from the Santa Fe for these plates. We manufactured two plates, as I have stated, for the Santa Fe Railroad.

X Q. 36. Did you get an order from the Santa Fe Company to manufacture these two plates?

A. I had a request from the Santa Fe Company to submit the so-called Harriman plate, "Exhibit No. 12," with two ribs on the bottom, and we manufactured one plate and was requested to furnish another one exactly like the first one for testing purposes.

X Q. 37. Were these requests in writing?

A. I think not.

X Q. 38. How did they come about, and in what manner?

A. In negotiating with Mr. Hodges, manager of the Santa Fe Road, he asked us to submit a sample of the Harriman plate with two ribs on the bottom. He had previously been furnished samples of the plate without the ribs.

Nearly two years prior to that time he was furnished a corrugated top plate and a drawing with two ribs on the bottom. He had that sample in his office.

The samples submitted had corrugations on the bottom surface as well as the top and differed in that respect from what he called the Harriman tie-plate and my impression is that he stated his engineers did not want corrugations on the bottom, but did want a flat bottom plate with two ribs. I am giving you this as it is reported to me and I gave authority to manufacture the one plate, which we were afterwards requested to duplicate, being the so-called Harriman plate with two ribs on the bottom. We have furnished Mr. Hodges many times several samples of various types of plates.

X Q. 39. When did you get the order for the ten thousand
75 tons of plates shown in "Exhibit No. 14" from the Santa Fe people?

A. I can't give you the actual date of the order, Mr. Cooke, without reference to the record.

X Q. 40. Will you please produce the same?

A. I will be pleased to do so.

X Q. 41. When did you first start to roll plates like "Exhibit No. 14" under the Santa Fe order?

A. I can't answer that, either. I can't give you the exact date when we started to roll these plates on the ten thousand order, without reference to the records.

X Q. 42. How were these two plates made, Mr. Hawley, by rolling or not?

A. I have described the process, Mr. Cooke. We took a steel bar, put the bar in the milling machine and the planer, we planed and

illed out the grooves on the upper surface and planed or milled ut the ribs on the lower surface and punched the holes.

X Q. 43. Then am I to understand that prior to the filing of the ill in this case you only made these two sample plates like "Exhibit o. 14"?

A. I answer that question by stating that we manufactured two lates prior to the filing of the bill and prior to the manufacture of ie same kind of a plate by the Elyria Iron & Steel Company. I an not answer without reference to my records whether we actually olled any of the order for ten thousand tons of this type of plate rior to the filing of the bill.

X Q. 44. Are you positive, Mr. Hawley, that the request for these vo plates did not come in writing?

A. I am under the impression it did not. The order for the econd one came over the telephone to me.

X Q. 45. Will you please look among your records and see if you ave any request from the Santa Fe Company as to these two plates, and if so, produce the same?

6 A. Yes, I will.

X Q. 46. Will you also please produce from your records, you have the same, when you first started to roll tie-plates like Exhibit No. 14" for the Santa Fe Company under their order for en thousand tons?

A. I will give you the exact date.

X Q. 47. You have stated in your answer to Q. 5 that you have rrangements for the manufacture of track devices, especially tie-lates, at Pittsburg and other places. Who rolls your tie-plates at ittsburg and what type of plate your Company has rolled there?

A. Dilworth, Porter & Co., Ltd., have rolled the tie-plate, "Exhibit 2," for The Railroad Supply Company, and occasionally some flat lates.

X Q. 48. What do you mean by flat plates, Mr. Hawley?

A. I mean perfectly flat plates top and bottom, some with and ome without a shoulder on the upper surface.

X Q. 49. Dilworth, Porter & Co., Ltd., make tie-plates of their wn design, do they not?

A. They do.

X Q. 50. Are they competitors of yours?

A. They are.

X Q. 51. Among the other mills which you say have rolled your ie-plates, have you any competitors other than the Dilworth, Porter Co., Ltd.?

A. We have not.

X Q. 52. Your company has issued catalogs and circulars regard-ng the tie-plates you handle and manufacture have you not?

A. We have.

X Q. 53. Have you got any of these catalogs and circulars?

A. Yes, sir.

X Q. 54. How recently have you issued these catalogs and circulars?

77 A. We have one publication we started the commencement of the tie-plate business, which is in the form of a standard book, called Track. We have issued probably fifteen editions of that book and have issued same at intervals of one or two years apart, I think the book has had a circulation of nearly a hundred thousand copies. It is unique in its arrangement and you will find very few roadmasters of any road in the United States who do not have a copy. It describes tie-plates, their use and how to apply same. We issue catalogs covering the various types of plates we manufacture at quite frequent intervals, sometimes these are in the shape of a description of some particular form of plate; later on these circulars are grouped together or the cuts are rearranged and issued in catalog shape. The last issue was I think a year ago last spring or something like that. We are getting out extra editions of Track almost every two months.

X Q. 55. Did Track and all your other circulars illustrate the different kinds of tie-plates you manufactured?

A. Not each circular. Track contains illustrations of what we call our standard types of plates, and we aim to keep it corrected up to date.

X Q. 56. When did you first show by any circulars, catalogs or advertisements the type of tie-plates illustrated by "Exhibit No. 14"?

A. We have shown illustrations of the corrugated feature of that plate since 1904. The adding of the ribs, the first advertisement I think appeared in December, 1908.

X Q. 57. And that advertisement as to Exhibit No. 14 of that type of plate did not appear until after the defendants had manufactured and sold such plate. **Is that right?**

78 A. I don't think we advertised any picture of it in any advertisement prior to that time, and I have stated the only difference between "Exhibit No. 14" and "Exhibit No. 12" is two ribs on the bottom.

X Q. 58. You have been dwelling at different times upon the corrugations in the top of the plates that you manufacture. What do you understand these corrugations to be and used for?

A. I think the claims of the patent can answer that question better than I can.

By Mr. Brown: The question and answer are objected to as improper cross-examination and also objected to because the witness has not qualified as a patent expert.

X Q. 59. Can you not define what corrugations mean?

By Mr. Brown: Same objection.

A. In making a corrugated tie-plate the corrugations is material removed from the surface of the plate and distributed in such a manner that a corrugated top plate correctly designed has as great a strength as a perfectly flat plate would have. It lessens the weight of the plate and provides a medium for sand to pass off and this feature makes it, in my opinion, very much superior to a plate hav-

ing a perfectly flat surface. It greatly lessens the cost of the tie-plate. Corrugations are really grooves.

X Q. 60. When did you first start to manufacture what you call the corrugated top plate?

A. In the year 1895.

X Q. 61. Under what patent did you manufacture?

A. Under the Wolhaupter patent.

X Q. 62. Is the plate that you actually made at that time shown in any of your circulars or catalogs?

A. It is.

79 X Q. 63. Under what Wolhaupter patent was this plate made?

By Mr. Brown: Last objection repeated.

A. I testified this morning to the ownership of patents put in evidence marked "Exhibits 1, 2, and 3."

X Q. 64. Was it under any one or all of said Wolhaupter patents that you have mentioned?

A. I think it was under patents shown in "Exhibits 1 and 2."

X Q. 65. In the tie-plates which you first manufactured having corrugations on the top surface did such corrugations run parallel with the tie or cross the same?

A. Ran parallel with the tie.

X Q. 66. And that would be crosswise of the rail, is that a fact?

A. I think that is so.

And thereupon an adjournment was taken until Thursday, June 10th, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, June 10, 1909.

Met pursuant to adjournment.

Present: Counsel as before.

X Q. 67. You were asked to ascertain whether the request for the first tie-plate from the Santa Fe road was in writing or not. Please state whether you have made a search and what the result is.

A. I have looked through our records and they do not show any request for the first two plates furnished the Santa Fe Road, of the type in question.

X Q. 68. Have you with you the order or contract from the Santa Fe System for the ten thousand tons of tie-plates spoken of yesterday? If so, please produce the writings in that connection which

80 you have discovered, including the proposition of the complainant and the acceptance, if any, of the Santa Fe System, if the matter took that form.

A. I have the written proposition made by me as the president of The Railroad Supply Company on December 3, 1908, which is as follows:

"Mr. W. E. Hodges, General Purchasing Agent, Atchison, Topeka & Santa Fe Ry. System, Railway Exchange Building, Chicago, Ill.

DEAR SIR: I beg to submit the following proposition which is intended to be in accordance with suggestions made in our conversation in your office yesterday, the 2d instant, and which when accepted by you will constitute an agreement between us.

For a period of three years, the Atchison, Topeka & Santa Fe Railroad Company shall purchase tie-plates from The Railroad Supply Company at a price to be mutually agreed upon, with the understanding that during this agreement of three years, the Atchison, Topeka & Santa Fe Railroad Company will not purchase, except from The Railroad Supply Company or its licensee, tie-plates like those heretofore purchased by said railroad company from the Hart Steel Company or the Elyria Iron & Steel Company which had grooves, ribs or corrugations in or upon the top surface thereof, or any other tie-plates covered by any of the Wolhaupter or other patents owned or controlled by The Railroad Supply Company, and with the distinct understanding that said Railroad Company may cancel this agreement provided the future prices made by The Railroad Supply Company are not as low as are made by others.

In consideration of the above The Railroad Supply Company will sell to the Atchison, Topeka & Santa Fe Railroad Company, and the Atchison, Topeka & Santa Fe Railroad Company agrees to buy, ten thousand (10,000) net tons of tie-plates to be delivered f. o. b. cars Chicago or Joliet within the next four to six months at a
81 price of (price omitted by agreement of counsel) per net ton of two thousand (2,000) pounds.

Respectfully submitted,

THE RAILROAD SUPPLY COMPANY,

(Signed) By HENRY S. HAWLEY, *President.*"

I also have Mr. W. E. Hodges', General Purchasing Agent of the Atchison, Topeka & Santa Fe Railroad System, acceptance of my proposition of December 3d, which is dated, Chicago, December 4, 1908, and is as follows:

"CHICAGO, Dec. 4th, 1908.

Mr. Henry S. Hawley, President, Railroad Supply Co., Chicago, Ills.

DEAR SIR: This will acknowledge receipt of your letter of December 3d accepting proposition contained therein, and covering contract on tie-plates for three years as specified. I am handing you herewith two copies each of blue prints CES-1884, BES-1012, showing the dimensions of the two sizes of plates that will be required of the design specified.

I also enclose herewith a copy of specifications under which we are working since the adoption of this plate, and presume you can comply therewith.

We hav*ing* been having R. W. Hunt & Co. inspect these plates which I presume will be satisfactory to you.

This will be your authority to go ahead with the making of the rolls for these plates, and I will be obliged if you will have the rolls

made up for the lighter section of plates first, if there will be any difference in the time.

Formal orders will be sent you in due course covering shipping directions for these plates.

Yours truly,

(Signed) W. E. HODGES."

H-E.
Enclo.

82 These two letters cover the contract and order for the ten thousand tons of tie-plates.

X Q. 69. Did the specifications mentioned in the letter of Mr. Hodges accompany it?

A. They did.

X Q. 70. Were they used as the basis of construction of the plate rolled under this arrangement?

A. They covered the quality of material of which the plates were made.

X Q. 71. Were the blue-prints mentioned also furnished?

A. They were.

X Q. 72. Did they show the form and size of plate?

A. They showed the size, punching and type of plate.

X Q. 73. And were those blue-prints followed in the rolling of the plates constructed and furnished under this arrangement?

A. The blue-prints covering the special type of plate ordered was followed in the manufacture of the plates. The blue-prints referred to contained two other types of plates which were not covered by Mr. Hodges' orders.

X Q. 74. That was simply because these drawings happened to be on the same sheet, was it not, and had nothing to do with the contract?

A. I don't know. Mr. Hodges told me that the blue-prints showed two types of plates, and that one of the types was The Railroad Supply Company plate, and in negotiating with him he said that what he called our type of plate, meaning The Railroad Supply could be produced cheaper than either one of the other two shown on the blue-prints, and he thought, in view of that, I had a great advantage in securing his business and should make an attractive price.

X Q. 75. But that form of plate was not the one which
83 was covered by this arrangement, that is the form Mr. Hodges spoke of as your form?

A. That was the plate we furnished.

X Q. 76. In your proposition of December 3d, you spoke of "tie-plates like those heretofore purchased by said Railroad Company from the Hart Steel Company or the Elyria Iron & Steel Company which had grooves, ribs or corrugations in or upon the top surface thereof." Was that the tie-plate that was furnished under this arrangement?

A. We furnished the tie-plates according to the drawings or blue-prints which has grooves, corrugations in the upper surface.

X Q. 77. Were the tie-plates furnished by the complainant under this arrangement like those theretofore purchased by the Railroad Company from the Hart Steel Company or the Elyria Iron & Steel Company?

A. They were. The blue-print showing this type of plate was furnished to us by Mr. Hodges after we had submitted the two first manufactured plates which are identical with the plates shown on the blue-prints and furnished and sold by the Hart Steel Company, manufactured by the Elyria Iron & Steel Co. and sold to the Atchison, Topeka & Santa Fe.

X Q. 78. In making the first two sample or experimental plates you have spoken of, who suggested the addition of the projections on the lower surface?

A. I presume you mean the ribs on the bottom of the plate. As I testified yesterday, we submitted to Mr. Hodges some two years prior to this transaction, a corrugated top tie-plate having two ribs and corrugations on the bottom. We furnished them aluminum models of this plate. Mr. Hodges stated that they did not want the corrugations on the bottom of the plate as shown by this model. I
84 can not say positively who suggested the putting of the ribs on the two plates referred to. It might have been Mr. Hodges or it might have been our vice-president, Mr. Bell.

X Q. 79. In the request from the Railroad Company under which you furnished this aluminum experimental plate, were there any suggestions or requirements as to the features, especially in reference to the bottom of the plate?

A. This plate was submitted to the Santa Fe as a result of an inspection made by Mr. Benjamin Wolhaupter of the tie-plates and condition of ties on the System. This inspection was made by Mr. Wolhaupter at the request of the Santa Fe Road officials.

X Q. 80. Then you don't know whether the Railroad officials or engineers suggested the ribs on the bottom surface of the plate or not?

A. I don't know why they should suggest it any more than we. We have manufactured tie-plates with ribs on the lower surface.

X Q. 81. Question repeated.

A. I do not know.

X Q. 82. Have you the specifications and blue-prints referred to in this correspondence that you have been testifying about?

A. I presume the originals were sent to the mills.

X Q. 83. I will ask you, if it is not too much trouble, to produce and mark properly for identification either the originals of the blue-prints and specifications mentioned in this correspondence, or if you have not the originals any copies that you can identify.

A. I will do so.

Cross-examination closed.

85 Redirect examination by Mr. Brown:

R. D. Q. 84. Please look at the illustration which I now hand to you and state if you know what it represents.

A. This is a half-tone made from a photograph or drawing of the aluminum model of a corrugated top plate having corrugations on the bottom surface and two ribs on the bottom.

R. D. Q. 85. State whether or not that is the plate referred to by you in your answer to X Q. 78.

A. It is a picture of the same.

By Mr. Brown: The illustration is offered in evidence as "Complainant's Exhibit No. 18."

Redirect examination closed.

Recross-examination by Mr. Cooke:

R. X Q. 86. The experimental steel plates furnished by you were made like this "Exhibit 18," but without bottom corrugations, I understand.

A. The two steel plates that were manufactured had a flat bottom with two ribs and a corrugated top. They were not experimental plates, but were made exactly in accordance with the design of the plates covered by Mr. Hodges' orders for ten thousand tons.

R. X Q. 87. Were the two sample steel plates made before or after the aluminum plate, "Exhibit 18"?

A. They were made two years after, approximately two years after.

R. X Q. 88. Did they differ from "Exhibit 18" in any way except the omission of the corrugations on the bottom? I mean in form and shape, not as to thickness or dimensions.

A. It did not.

Recross-examination closed.

86 Redirect examination of the Witness Hawley by Mr. Brown:

R. D. Q. 89. Mr. Hawley, I notice in Q. 1, your age is stated as 48 years; is that correct?

A. It is not; it should be 58.

R. D. Q. 90. In answer to X Q. 83, you stated that you would produce either the originals or copies of the blue-prints and specifications mentioned in the correspondence between the Railroad Supply Company and Mr. W. E. Hodges, referred to in your answer to X Q. 68. Have you such documents?

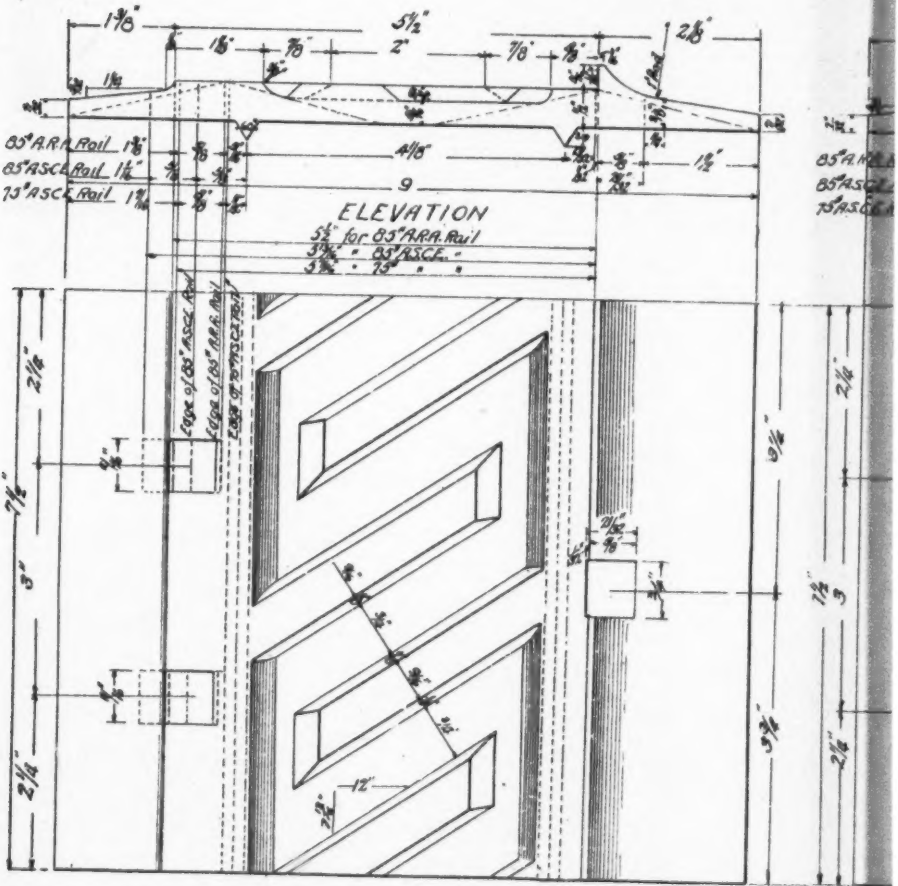
A. I have.

R. D. Q. 91. Please state what they are.

A. The specifications for tie-plates was enclosed in Mr. Hodges' letter already referred to, cover the material, chemical composition, workmanship and inspection. Also copy the two sets of blue-prints referred to in Mr. Hodges' letter, one being blue-print C. E. S. 1884, D. E. S. 1012, marked A. P. & S. F. Railway System, Tie-Plates Patterns, dated Chicago, Sept. 1908, approved fac simile signature, W. B. Storey, Jr., Chief Engineer, System adopted, fac simile signature, W. J. Kendrick, Second Vice-President. This blue-print shows the three types of plates referred to in my testimony. This blue-print covers plates for the 85-pound rail. Also blue-print, D. E. S.

1884, B. E. S. 1012, A. T. & S. F. Railway System, Tie-Plates Patterns, dated Chicago, November, 1908, approved, fac simile signature, W. B. Storey, Jr., Chief Engineer, System, but does not contain Second Vice-President Kendrick's fac simile signature. This print also shows the three types of plates referred to in my testimony and are for 48, 52, 56, 66 and 71 pound rail. In both the blue-prints the second tie-plate shown on the right-hand side is the type of tie-plate referred to in my testimony as being the Railroad Supply Company's plate and from which rolls were made to manufacture the order for 10,000 ton of plates.

(Here follow blue-prints marked pages 87 to 90.)



IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF ILLINOIS

THE RAILROAD SUPPLY CO.)
vs.) No.
THE HARD STEEL COMPANY) 29,204
and GUILFORD S. WOOD)

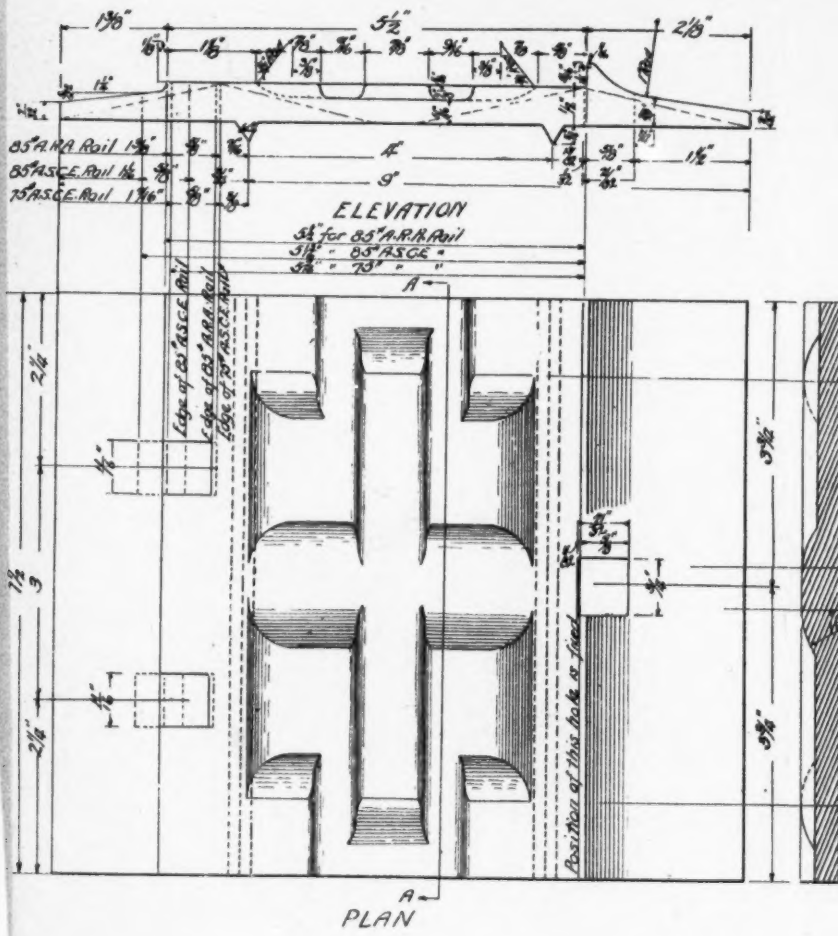
IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF OHIO.

THE RAILROAD SUPPLY CO.)
vs.) No.
THE ELYRIA IRON AND STEEL COMPANY) 7,660.

"Complainant's Exhibit No. 19, Santa Fe Blue-Print of Tie-Plate 1908."

Notary Public.

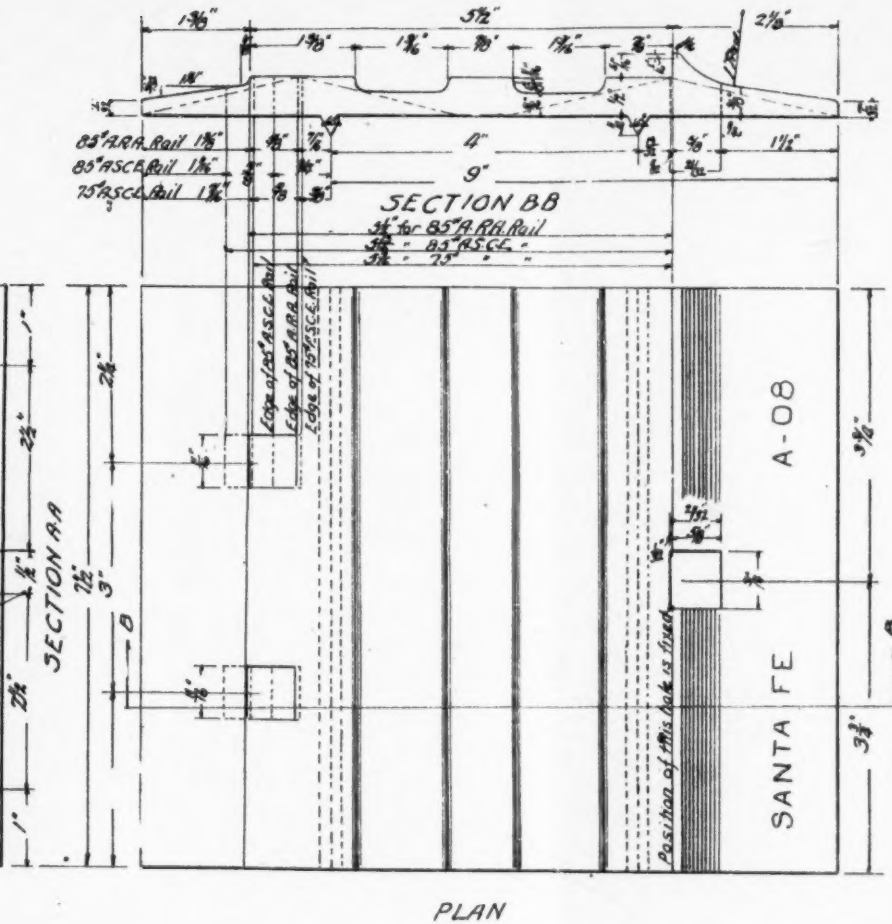
Note. [illegible] three [illegible]



Note. Punchings for different rails to be shown on top of plates by three figures indicating units and sixteenths as below

85# A.R.A. Rail	414
85# A.S.C.E. "	503
75# A.S.C.E. "	413

Numbers on top of plate to show year rolled



PLAN

C.E.S-1884
B.E.S-1012

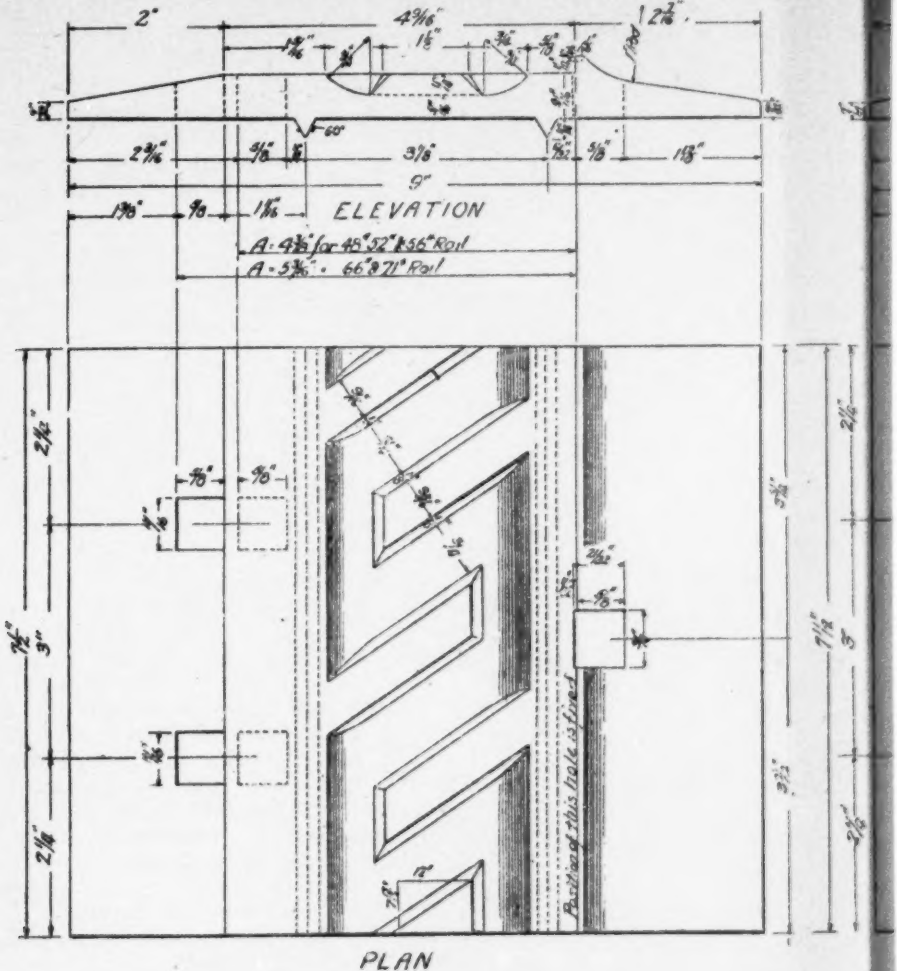
A.T. & S. Fe. Ry. System

TIE PLATES: PATTERNS

Scale: Full size Chicago Sep 1908

Approved [signature] Adopted [signature]

Chief Engineer System Second Vice President



Wt of Rail	Dist "A"	Base of Rail	*Mark
48"	4 3/16"	3 1/16"	312
52"	4 3/16"	3 1/16"	312
56"	4 3/16"	3 1/16"	312
56" CCLSE	4 3/16"	3 1/16"	315
60"	4 13/16"	4 1/16"	403½
61"	4 7/8"	4 5/16"	405
65"	5 1/16"	4 7/16"	407
66"	5 3/16"	4 9/16"	409
71"	5 3/16"	4 9/16"	409

* "Plates punched for different rails are to be marked by three figures as shown in this column, the first digit representing units and the other two sixteenths of the width of the rail for which the plate is punched. These numbers are to be stamped on plates

Number on top of plate to show year rolled

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

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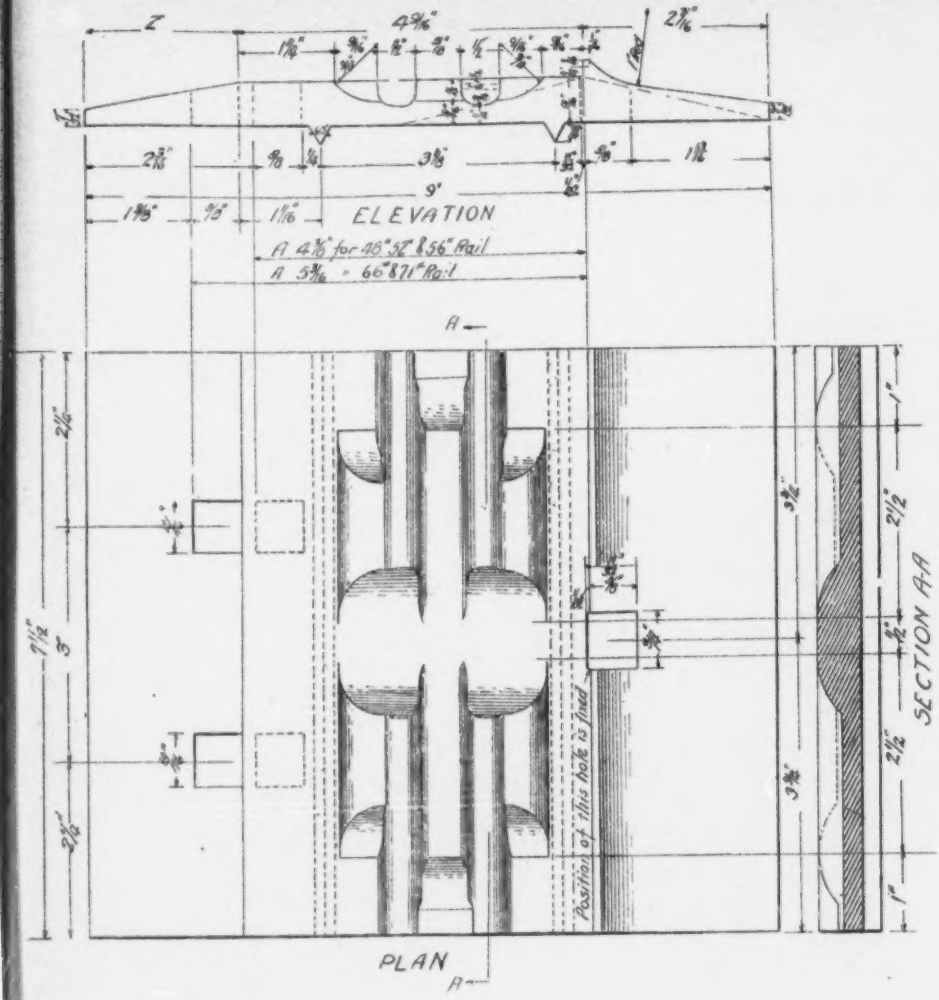
THE RAILROAD SUPPLY CO.,)
vs.) No.
THE MART STEEL COMPANY) 29,294.
and GUILFORD S. WOOD)

"Complainant's Exhibit No. 29, S



UIT COURT
OF THE
NOIS.

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF OHIO.

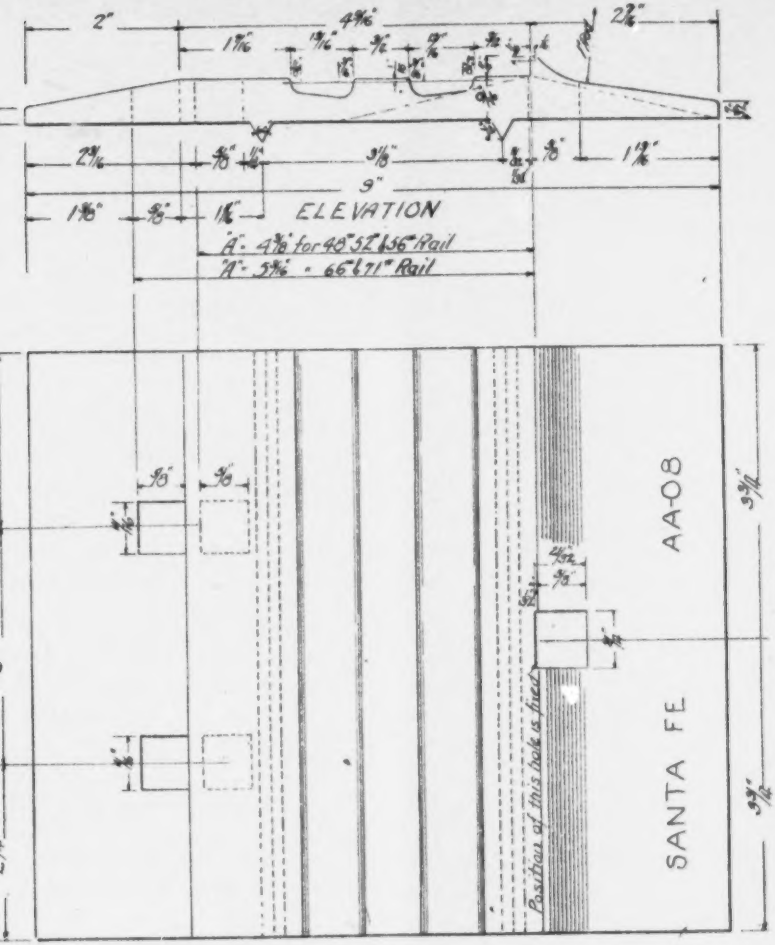
THE RAILROAD SUPPLY CO.
vs.
THE ELYRIA IRON AND
STEEL COMPANY

No. 7,668.

No. 294.

No. 20, Santa Fe Blue-Print of Tie-Plate 1908."

Notary Public.



C.E.S-1884
B.E.S-1012

A.T. & S. Fe Ry. System.

TIE PLATES: PATTERNS

Scale: Full size: Chicago Nov. 1908

Approved: [signature] Adopted: - - - - - - - -

Chief Engr. System Second Vice President

1 Mr. Brown: Complainant's counsel introduces in evidence the specifications referred to by the witness in the last answer nd the same is marked "Complainant's Exhibit No. 11, Santa Fe ie-Plate Specifications 1908."

Also introduces in evidence the two blue-prints identified by the itness as "Complainant's Exhibit No. 19" and "Complainant's xhibit No. 20," respectively, "Santa Fe Blue-Print of Tie-Plate 908."

R. D. Q. 92. In X Q. 46, you were asked when you first started roll tie-plates like "Exhibit No. 14" for the Santa Fe Company nder their order for 10,000 ton, and you answered: "I will give the xact date." Please do so now.

A. January 1, 1909, that is as shown by the records in our office.

R. D. Q. 93. Give as nearly as you can the date when you started execute the order called for by your proposal of December 3, 1908, nd Mr. Hodges' acceptance of December 4, 1908?

A. We placed the order for the rolls on December 4, 1908, and ork was started on same that day.

Examination of the witness Hawley closed.

HENRY S. HAWLEY.

2 And thereupon JOHN HOWARD MCELROY, a witness produced on behalf of the complainant, having been first duly autioned and sworn, testified in answer to interrogatories by Mr. rown as follows:

Q. 1. What is your name, age, residence and occupation?

A. John Howard McElroy, 42 years, Chicago, Illinois, solicitor of atents and expert in patent causes.

Q. 2. You may state what experience you have had with mechanal matters and in the comparison of mechanisms one with another nd with letters-patent for invention, tending in your opinion to ualify you to testify as an expert witness with regard to mechanical bjects.

A. I received my general education at De Pauw University, gradating from a course in which mathematics and natural sciences redominated. I then took a course in engineering at the Illinois ate University, after which I was employed for a time in the office the Chief of Engineers of the United States Army at Washington, C. While holding this position I took the Civil Service examinaon for admission to the Examining Corps of the United States atent Office, and as a result of this examination in the summer of 91 I was appointed to said corps, where I remained until I resigned the summer of 1896 and came to this city to begin the practice my profession.

While I was a member of said Examining Corps, my work consted of the examination of applications for letters-patent of the nited States, which examination required a careful study and thorgh understanding of the specifications and drawings of the strucres sought to be patented, and likewise a careful comparison of

these structures as defined by the claims of the applications
93 with the similar structures of the prior art to ascertain whether or not the claims defined structures of sufficient novelty to warrant the grant of a patent therefor. This work, continued throughout my entire connection with the Patent Office, necessarily rendered me expert in the comparison of structures as they actually existed and as defined by the claims of patents.

Since coming to this city I have been busily engaged in the practice of my profession, except for a portion of two years when I was incapacitated by ill health, and I have prepared, and prosecuted to issue, a large number of applications for letters-patent of the United States and other countries, which work necessitated a careful study of the structures sought to be patented as well as of the much more numerous structures representing the prior art as cited by the Examiners in the various Patent Offices.

I have frequently been called upon to give my opinion as to whether or not certain structures submitted were probably patentable in view of similar structures of the prior art, and also as to whether or not certain claims of certain patents submitted were probably valid in view of similar structures submitted as representing the prior art, and, if valid, whether or not they could properly be construed as covering certain other structures submitted.

Each year since beginning the practice of my profession I have been called upon to testify as an expert witness in patent causes pending in this and other Circuits throughout the United States, so that owing to the extended training and experience I have had, I feel competent to testify as an expert in patent causes generally.

I am an active member of the Western Society of Engineers, and since I went into the Patent Office in 1891, all my working hours have been devoted to mechanical and patent matters, and for
94 the last few years my time has been mainly devoted to the preparation for and giving of expert testimony in patent causes.

Q. 3. Please examine "Complainant's Exhibits Nos. 1, 2 and 3," being, respectively, the Wolhaupter patents No. 691,332 and No. 721,644, and state whether or not you understand the inventions therein respectively described and claimed?

A. I do.

Q. 4. Please state what you understand to be the invention illustrated and described in each of the three patents "Complainant's Exhibits 1, 2, and 3," particularly as set forth in claim 8 of "Exhibit No. 1"; claims 1, 2 and 3 of "Exhibit No. 2" and claims 7 and 9 of "Exhibit No. 3."

A. All three of these patents are concerned with railway tie-plates, which are metallic plates interposed between the under sides of the rails and the tops of the wooden ties ordinarily employed in railroad construction so that the rails rest upon and are supported by the tie-plates, which in turn rest upon and are supported by the ties. Spikes of some form are passed through apertures in the tie-plates and into the ties and engage with the edges of the bottom flanges of

the rails to hold the tie-plates in position on the ties and the rails in position on the tie-plate.

"Exhibit No. 1, Wolhaupter Patent No. 538,809."

Taking up the first patent No. 538,809, the invention to which the question is especially directed has its object defined in lines 60 to 65 of page 1 of the specification as follows:

"The invention further contemplates a form of plate provided with top and under flanges which shall be extremely strong in its construction and effective in its designed use, and yet easily rolled or formed into shape, as well as very light weight."

(See p. 16.)

95 One specific form in which this invention may be embodied is illustrated in the drawings of which Fig. 1 represents a portion of a rail A as it would appear resting on the tie-plate C, which in turn rests on the tie B, if one looked down on the assembled parts. I note that the spikes, which are necessarily employed to hold the parts together, are omitted in this figure. In Fig. 2 is illustrated the same parts as they would appear looking at Fig. 1 in side elevation with the tie B in section directly along the end of the tie-plate C. Fig. 3 is another view in section through the rail A looking in the direction of its length as it rests on the plate C, the tie not being shown in this figure.

The description of the specific form of the invention illustrated is found in lines 76 to 86 of page 1 of the specification, which are as follows:

"The plate is preferably, although not necessarily formed into the shape shown more particularly in Fig. 2, that is to say, what may be termed a trusted shape so that flanges are provided on both the under side as at c, c^1, c^2, c^3 and top sides as at c^4. On the top side a way c^5 for the rail or what may be termed the rail seat is provided. The flanges on the under side are preferably shaped with comparatively sharp edges c^6 so that they will readily enter and separate the grain of the tie."

(See p. 16.)

The specification then goes on to describe some of the structural and functional advantages resulting from this form of the tie-plate. Some of these to which I particularly desire to call attention are set forth in lines 20 to 32 of page 2 of the specification, and are as follows:

"So also by construction as above the top of the plate where the rail is seated comprises a series of flat portions with a series of depressions between, so that while there is abundant wearing surface between the rail and plate, there is space for sand, cinders, etc., to work out. Again, these depressions permit the draining off of

96 water and moisture so that in cold weather the top of the plate, particularly the space between the rail and plate, is not covered with ice and the friction between the rail and plate thereby either lessened or obviated entirely."

(See p. 16.)

The specification then goes on to describe what he calls the second feature of the invention, which is the ability to adjust the plate to take up any widening of the gauge due to the lateral movement of the plate and rail, but as the claim to which my attention is directed is not in any way concerned with this feature, I do not consider it necessary to refer further to this portion of the specification.

The eighth claim is as follows:

"8. A railway tie-plate formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie, and on its upper side with a series of flanges on which the rail rests, substantially as described."

It will be obvious that this claim is in its form generic and is directed to tie-plates having certain features of construction, and that the specific form of Wolhaupter's invention illustrated in his patent has these specific features.

(For drawings, see p. 16.)

The first requirement is that the railway tie-plate shall be "formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie."

These devices in the specific form of invention illustrated are the flanges c, c^1 c^2 and c^3, which are described as "shaped with comparatively sharp edges c^6 so that they will readily enter and separate the grain of the tie," so that they are "more or less sharpened" and "adapted to penetrate and engage the tie."

97 The second limitation of this claim is that the railway tie-plate shall be formed:

"on its upper side with a series of flanges on which the rail rests."

In the specific embodiment of invention illustrated, these flanges are the flat raised portion on which the rail rests, located between the grooves or channels on the upper surface. The flanges are higher at the ends of the tie-plates than at the central portion on which the rail rests, the higher end portions being indicated by the reference character c^4.

"Exhibit No. 2, Wolhaupter Patent No. 691,332."

The second Wolhaupter patent, No. 691,332, covers a structure which the inventor patented as an improvement on the structure of his prior patent No. 538,809, which I have just considered. He evidently has reference to this prior tie-plate in the paragraph found in lines 13 to 19 of page 1 of the specification, which is as follows:

"It has been found in the use of tie-plates for railroads that there is a material advantage in providing on the upper side of the plate one or more flanges on which the rail base can rest, so that channels or depressions are provided between the rail base and the body of the plate proper."

(See p. 16.)

He then goes on to state the object of his invention as follows:

"My invention has for its object the production of a tie-plate which, while incorporating this feature of flanges on the upper side for sustaining the rail, will have the flanges on the lower side so arranged and disposed that there is the least liability of the plate buckling."

He then defines the invention briefly as follows:

"To this end, therefore, the invention primarily consists in
98 the provision on the upper side of a tie-plate, of one or more flanges or projections for sustaining the rail, and on the under side flanges for entering the tie parallel with the grain thereof, the flanges on the lower side being located directly or substantially beneath those on the upper side."

(See p. 16.)

I note that while this definition of the invention describes the flanges on the under side as entering the tie "parallel with the grain thereof" this limitation does not appear in the claims to which my attention was directed, and accordingly may be disregarded so far as the construing of those particular claims is concerned.

(For drawings, see p. 16.)

In illustrating the specific embodiment of his invention shown in the drawings of his patent, the tie-plate is illustrated alone in figures 1, 3 and 4, of which Fig. 1 is a perspective view of the tie-plate, showing how it would appear if looked at from a position above it and diagonally off from one corner thereof. Fig. 3 is a top plan view showing how it would appear if looked at directly from above, while Fig. 4 is an end elevation showing how it would look if it were held in its proper position on the level with the eye. In Fig. 2, the rail A is shown in cross-section and in the position which it would occupy in the plate which is there shown in side elevation.

The description of the structure so far as it is concerned with the present inquiry begins with line 48, and is as follows:

"In carrying out the invention, A represents the rail, and B what I will term the 'body proper' of the plate. Located on the upper side of the plate is a series of four upwardly projecting flanges C. These flanges are preferably, although not necessarily, flat on their upper edges, and their sides are parallel. On the lower side of the plate is a series of four tie-engaging flanges D, extending parallel with and directly beneath the flanges C. These flanges D are preferably
99 deep and narrow or thin, so that they will readily enter the grain of the tie and become embedded therein. At each side of the plate the metal is turned up to form the flanges E, and the middle portion is extended out in a horizontal direction, as at E^1, so that a recess E^2 is formed, in which the rail base sets, the flanges E thus constituting abutments to receive the lateral thrust of the rail. If desired, the portion E^1 when it is cut out of the portion E may be so shaped as to provide projections *e*, which fit over the rail base and hold the latter from tilting."

(See p. 16.)

Recess.

The mechanical interaction of the rail and the tie-plate will be readily observed from Fig. 2, and it will, of course, be understood that the plate is placed on the tie with the flanges D embedded therein so that the "body proper" B of the tie-plate rests on the top of the tie. The desired results secured from this construction are set out in lines 77 to 86 of the specification as follows:

"It will thus be seen by the above construction that I have provided a plate wherein the rail is sustained above the body of the plate by flanges on the upper side of the plate and that directly beneath the flanges are located the tie engaging flanges, so that the weight will be sustained at the points where there is the greatest pressure on the plate. In addition to this I have provided the flanges E to prevent lateral movement of the rail on its supporting flanges."

(See p. 16.)

The novel structure in tie-plates is defined in the first three claims of this second Wolhaupter patent No. 691,332, as follows:

"1. A railway tie-plate provided on its upper side with one or more flanges on which the rail may rest or by which it is directly sustained and on the under side with one or more tie engaging flanges extending parallel with the upper flanges and directly beneath the latter, substantially as described.

100 "2. A railway tie-plate provided on its upper side with one or more flanges on which the rail may rest and by which it is directly sustained and on the under side with one or more tie engaging flanges extending parallel with the upper flanges and directly beneath the latter *and sharpened to permit them to readily enter the tie*, substantially as described.

"3. A railway tie-plate provided on its upper side with one or more flanges on which the rail may rest and by which it is directly sustained, on the under side with one or more *sharpened* tie engaging flanges extending parallel with the upper flanges and directly beneath the latter, *and on the upper side with an additional flange or flanges extending above the plane of the rail sustaining flanges and adapted to receive the lateral thrust of the rail, substantially as described.*

In writing the above claims I have italicized or underscored the additional limitations of claims 2 and 3 by which they are distinguished, respectively, from claims 1 and 2.

It will be noted that all these claims are limited to a structure in which the railway tie-plate is "provided on its upper side with one or more flanges on which the rail may rest or by which it is directly sustained," and in the specific embodiment of the invention illustrated in the patent these flanges C take the specific form illustrated.

All the claims under consideration likewise provide that the tie-plates are provided:

"on the under side with one or more tie engaging flanges extending parallel with the upper flanges and directly beneath the latter."

In the specific embodiment of the invention illustrated in the second Wolhaupter patent, these tie-engaging flanges D take the form shown in the drawings, and are adapted to penetrate the tie

for some little distance, they being sharpened "to permit them to readily enter the tie" as specified in claims 2 and 3.

101 In claim 3 the additional limitation is set out that on the upper side the tie-plate shall be provided:

"with an additional flange or flanges extending above the plane of the rail sustaining flanges and adapted to receive the lateral thrust of the rail."

In the specific embodiment of the invention illustrated, those additional flange or flanges to take the lateral thrust of the rail take the form illustrated by the flanges marked E.

"Exhibit No. 3, Wolhaupter Patent No. 721,644."

Referring now to the last Wolhaupter patent No. 721,644, the objects of the invention, so far as the features set out in the claims to which the question is directed are concerned, are set out in lines 19 to 27 of page 1 of the specification, as follows:

"third, the manufacture of a tie-plate with the least amount of metal consistent with durability and strength, with a view of cheapening the cost of manufacture, and, fourth, the manufacture of a tie-plate of such configuration upon its surface that water, sand, or other deleterious material will be drained off or away from the same."

(See p. 16.)

This latest of the three Wolhaupter tie-plate inventions under consideration is illustrated in at least three different specific forms, but for the sake of brevity I will only refer to the form illustrated in Figs. 5, 6 and 7, where Fig. 6 is a top plan view of the tie-plate, while Fig. 7 is a side elevation of the same and Fig. 5 is an elevation as it would appear in vertical section on the line 5—5 of Fig. 6.

As the description of this particular form shown in Figs 5, 6 and 7 is not very full in the specification, the form shown in Figs. 2,

102 3 and 4 being the one that is described in greatest detail, I will not quote directly from the specification, but will state with reference to the specific form shown in Figs. 5, 6 and 7, that it, as a whole, consists of the plate proper, which is of comparatively thin metal and which has on its under side a central tie engaging flange d^1 and at its edges two somewhat similar but smaller flanges d^2, all three flanges being sharpened for the customary purpose of engaging and penetrating the top of the ties. The spike holes d^4 are, of course, suitably located so that if spikes are driven through said holes the overhanging portions of the heads of the spikes will engage the base of the rail to hold it in position on the plate. However, I may note that the claims inquired about are not concerned in the structure of the under side of the plate.

(For drawings, see p. 16.)

The upper side of the plate is provided "with a series of sand spaces, channels, or grooves E, E." In the particular form under

consideration, these grooves are of equal depth throughout their length, and extend squarely across the tie-plate and flanges, and it will be noted that in this form the grooves or spaces between the flanges extend parallel to the length of the rail, whereas in the form shown in the two prior Wolhaupter patents, they extend transversely of the rail. Considered with reference to the length of the tie-plates themselves, however, these grooves in this latest Wolhaupter patent are transverse, whereas in the earlier Wolhaupter patent they were longitudinal.

I may now quote a portion of the specification directly, beginning with line 18 of page 2 of the specification as follows:

"In the form shown in Figs. 5, 6 and 7 it may be desirable to use one or more shoulders for the rail flange, and such rail abutting shoulder is shown at F. The object being to drain the water or sand from the rail bearing surface of the tie-plate, it is
103 obvious that the channels shown in Fig 5 will accomplish that purpose, and therefore I do not limit my invention to facing the channels with sloping bottoms across the tie-plate, since manifestly these channels may be faced in any desired direction."

(See p. 16.)

I may here state that I am not exactly certain what is intended by the final portion of the last quoted sentence, but so far as the claims inquried about are concerned, it may be disregarded, as these claims provide that the grooves or channels shall be transverse, and that the rail abutting shoulders shall also be transverse.

The two claims inquired about are as follows:

"7. A tie-plate provided in its rail supporting surface with transverse grooves or channels, and at one margin of said supporting surface with a transverse rail abutting shoulder.

* * * * * * *

"9. A tie-plate provided in its rail supporting surface with transverse grooves or channels, *reaching to the edge of the plate*, and at one margin of said surface a transverse rail abutting shoulder."

I have indicated the additional limitation of claim 9 by underscoring or italicizing the clause not found in claim 7.

These claims provide that the "rail supporting surface," which is evidently the surface between the spike holes d^5, shall be provided "with transverse grooves or channels," which are the channels E. These claims further provide that a "transverse rail abutting shoulder" (the shoulder F which is shown as divided into sections by the spike holes on that side), shall be located "at one margin of said (rail supporting) surface."

Q. 5. Please look at "Complainant's Exhibit No. 15, Defendants' Infringing Tie-Plate," and also look at "Complainant's Exhibit No. 16, Photograph Defendants' Tie-Plate," and state whether or
104 not the said photograph "Exhibit No. 16" correctly illustrates the tie-plate "Exhibit No. 15."

A. While the photograph is evidently not taken from this particular tie-plate, it shows one that seems to be exactly the same in

every material respect, and I should say that the photograph correctly illustrates the tie-plate "Exhibit No. 15."

Q. 6. Please again refer to "Complainant's Exhibits Nos. 1, 2 and 3 and also to "Complainant's Exhibit No. 15" and state whether or not, in your opinion, said "Exhibit No. 15" embodies and contains the invention described and claimed in either of the said "Exhibits 1, 2 and 3, and if so, point out which claim or claims of the said "Exhibits Nos. 1, 2 and 3," in your judgment, describe and cover the construction embodied in said tie-plate "Exhibit No. 15"; and in giving your answer, you may state the reasons that you have for the opinion you express.

A. I have made the comparison requested, and as at present advised, it is my opinion that the "Exhibit No. 15" tie-plate is such a structure as is defined by claim 8 of the Wolhaupter patent No. 538,809; by claims 1, 2 and 3 of the Wolhaupter patent No. 691,332; and by claims 7 and 9 of the Wolhaupter patent No. 721,644, and contains the inventions sought to be covered by the above enumerated claims of all these patents.

The tie-plate constituting "Complainant's Exhibit No. 15" is so simple in its construction that I do not think it needs any description apart from that which will necessarily be given it in the comparison of it with the structures defined by the above mentioned claims of the Wolhaupter patents, and I will here simply note that the upper side of the plate is shown at the top of "Exhibit No. 16," while the under side is exposed in the bottom part of the exhibit.

105 Referring first to claim 8 of the Wolhaupter patent No. 538,809, it will be seen that the defendant's tie-plate is provided on its under surface with two parallel transverse ribs or flanges extending entirely across the plate and located substantially beneath the edges of the rail supporting surface. These flanges are substantially in the form of an equilateral triangle in cross-section and their edges are substantially sharp, so that defendant's railway tie-plate is evidently "formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie," as provided in claim 8 of said first Wolhaupter patent.

Considering now the upper surface of the tie-plate, the one appearing at the top of "Exhibit No. 16," if we consider the body of the tie-plate to be that represented by its thin portion, it is provided on the upper side with three transverse parallel flanges on which the rail necessarily rests, as these three flanges are located between the spike holes, so that defendants' tie-plate is provided "on its upper side with a series of flanges on which the rail rests," as provided for in claim 8 of the Wolhaupter patent No. 538,809.

Accordingly, for the foregoing reasons, I am of the opinion that defendant's tie-plate *in* such a tie-plate as is defined in claim 8 of the Wolhaupter patent No. 538,809, and that it is provided with the features of limitation set out in that claim, and that it operates in the same way and for the same purpose when associated with the ties and rails of a railroad, as does the Wolhaupter tie-plates, and that it contains the invention intended to be covered by this claim of the Wolhaupter patent No. 538,809.

Considering defendant's tie-plate in connection with the second Wolhaupter patent No. 691,332, it will be noted that the two
106 parallel flanges triangular in cross-section on the under side of defendant's tie-plate, are parallel to the flanges on the upper side and are directly beneath the two outer flanges, so that defendant's tie-plate is "a railway tie-plate provided on its upper side with one or more flanges on which the rail may rest or by which it is directly sustained and on the under side with one or more tie engaging flanges extending parallel with the upper flanges and directly beneath the latter," as provided in claim 1 of the second Wolhaupter patent No. 691,332. As before noted, these flanges on the lower side being triangular in cross-section are "sharpened to permit them to readily enter the tie," so that defendant's tie-plate has the additional limitation set out in claim 2 of the second Wolhaupter patent No. 691,332.

As seen in the upper part of "Complainant's Exhibit No. 16," defendant's tie-plate has on the upper side just outside of the limit of one of the rail supporting flanges an additional flange or flanges extending above the rail supporting flanges and evidently adapted to receive the lateral thrust of the rail, so that defendant's tie-plate has the additional feature of claim 3 of the second Wolhaupter patent, i. e., "an additional flange or flanges extending above the plane of the rail sustaining flanges and adapted to receive the lateral thrust of the rail."

Accordingly, for the foregoing reasons, I am of the opinion that defendants' tie-plate, as exemplified in "Complainant's Exhibit No. 15" is such a tie-plate as is defined in claims 1, 2 and 3 of the Wolhaupter patent No. 691,332, as it contains all the features set out in said claims employed evidently for the same purpose as are the corresponding features of the specific form of Wolhaupter plate shown in this patent.

Referring now to the third Wolhaupter patent No. 721,644, and comparing defendants' tie-plate with the structure defined in
107 claims 7 and 9 of the third patent, it will be noted that the grooves or channels extending between the flanges, the upper surfaces of which constitute the rail supporting surface, are transverse to the length of the tie-plate, and it will also be noted that they reach to the edge of the plate. It will further be noted that the additional flange or rail abutting shoulder of defendants' tie-plate pointed out in my comparison of it with the second Wolhaupter patent is likewise transverse and located at one edge or margin of the rail supporting surface, so that defendants' tie-plate is undoubtedly "a tie-plate provided in its rail supporting surface with transverse grooves or channels, reaching to the edge of the plate, and at one margin of said surface a transverse rail abutting shoulder."

Accordingly, for the foregoing reasons, I am of the opinion that defendants' tie-plate is such a tie-plate as is defined by claims 7 and 9 of the Wolhaupter patent No. 721,644, and contains the invention sought to be covered by these claims.

Q. 7. State whether or not the invention of the three Wolhaupter patents, "Complainant's Exhibits Nos. 1, 2 and 3," and set forth in

he six claims to which you have made reference in your last pre-eding answer, are capable of conjoint as well as separate use and whether or not you find them to be conjointly used and embodied n the tie-plate identified as "Complainant's Exhibit No. 15."

A. They are, and I do.

And thereupon an adjournment was taken until Friday, June 11, 909, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

08 CHICAGO, ILLINOIS, June 11, 1909.

Met pursuant to adjournment.

Present: Counsel as before.

Direct examination of the witness closed.

Cross-examination by Mr. Reed:

X Q. 8. Have you ever seen a railroad tie-plate made?

A. No.

X Q. 9. Have you ever examined tie-plates in actual position in use with a view of determining their functions and their relations to and *affect* on the rails and ties?

A. Yes.

X Q. 10. Then you are acquainted, theoretically at least, with the functions which the different portions of tie-plates perform, their relations with each other, their effect on the rail and tie and their mutual interdependence or co-relation?

A. As I understand your question, I will answer it affirmatively.

X Q. 11. What is the function or effect of projections or flanges on the lower side or surface of the tie-plate?

A. They are intended to assist the spikes in holding the plates from lateral movement on the ties.

X Q. 12. By the expression "lateral movement" in your answer, you refer to movement sidewise or crosswise of the track do you not?

A. Yes.

X Q. 13. And in your judgment, the projections on the lower surface of the tie-plate would have no function or effect in preventing longitudinal movement of the tie-plate?

A. I see I misunderstood your previous question; when I said "lateral movement," I meant any movement in a horizontal
109 direction as distinguished from a vertical or up and down movement, so that the answer to your X Q. 13 would be negative.

X Q. 14. And it is your judgment that the function of a projection from the lower surface of a tie-plate would be to prevent movement in a horizontal direction and obtain what might be called horizontal rigidity between the plate and the tie?

A. As I understand your question, yes.

X Q. 15. And that is the sole function of any projection, is it not?

A. I could not say that tie-plates have never been constructed or designed in which the inventor may not have had in mind some

other function for the projection on the bottom of the plate, but so far as the patents in controversy are concerned, that is the main function. I believe that some of the patents refer to some additional functions resulting from the specific form of projection, but as I recall it, none of these details are involved in the present controversy.

X Q. 16. And any projection from the bottom of the tie-plate sufficient to penetrate or engage with the tie would perform this function of preventing horizontal movement to a greater or less degree no matter whether the projection were acute, square or blunted, or whether it was in the form of a rib or flange, or whether it was shortened so that it was practically a point or spike. In all these cases the function of the projection would be to prevent horizontal movement on the part of the plate?

A. If the projection actually penetrated the tie that would be the result, but it might not necessarily be the function of the projection.

X Q. 17. Please distinguish what is in your mind between function and result?

A. Ordinarily speaking, the function of an element is to
110 produce a certain intended effect. The result is sometimes different from what was intended.

X Q. 18. So far as you have investigated these patents, is not the intended result of a projection on the lower surface of the plate the prevention of horizontal movement on the part of the plate?

A. Yes.

X Q. 19. And is not, in your judgment, this the result of the projection from the lower surface of the plate?

A. Generally speaking, if the projections are rigid with the plate, it seems that that would be the necessary result.

X Q. 20. And this result or function, call it whichever you choose, of a rigid projection on the lower surface of a tie-plate engaging with the tie follows irrespective of the construction of the plate on its upper surface, does it not?

A. That question might involve some structure very foreign to anything that you might have in mind or I might have in mind, so that I would not care to answer absolutely in the affirmative unless any particular structure you have in mind were submitted to me.

X Q. 21. Well, so far as you have any structure in mind, is not your answer to said question in the affirmative?

A. Referring back to your X Q. 20, unless the projection actually penetrates the surface of the tie, which is not necessarily implied by "engaging with the tie," this prevention of horizontal movement on the part of the plate need not necessarily result to any material degree. As I understand your question, however, and so far as I have any tie-plate structures in mind, I would say that the projections on the under surface, if they actually penetrated the tie,
111 would have the result to a certain extent, irrespective of the construction of the plate on its upper surface, of preventing horizontal movement.

X Q. 22. It is perfectly clear to your mind that a rigid projection on the under surface of the tie-plate which penetrated the tie would

have the function or result of preventing horizontal movement on the part of the plate irrespective of whether the plate was constructed with a corrugated or flanged top and with or without a rail flange or shoulder, meaning by the latter expression a projection, flange or shoulder against which the side bottom of the rail abutted?

A. It would certainly have that function to some extent, provided that the material of the tie engaged the projection on all sides, and the tie was sound.

X Q. 23. And the fact that the tie-plates was corrugated or not corrugated on top or had a shoulder against which the rail abutted or not, would not in any way modify or affect the function of this rigid tie penetrating projection on the under surface, I understand?

A. Your question is such a broad statement that I would not care to answer it unqualifiedly in the affirmative. I would state, however, that the construction of the upper surface would not, in my judgment, destroy the primary function of the rigid tie penetrating projection in preventing horizontal movement. I could not, of course, say that it might not modify or affect the function.

X Q. 24. Please tell us in what way you have in mind the function of the rigid projection on the bottom of the tie-plate penetrating the tie would be affected by the presence or absence of corrugations and of a rail shoulder, I will call it for short, on the upper surface?

A. I have no particular action in mind, but your questions are of such a broad and comprehensive character that they might
112 include some construction entirely foreign to anything that I have in mind that might in some way have some action that I did not anticipate. If you will confine your questions to actual structures that you present to me I can answer them satisfactorily to you.

X Q. 25. Have you in mind any structure, or have you seen any structure, of a tie-plate, or have you seen a description of an- structure of a tie-plate in which the function or action of a projection, rigid, from the lower surface penetrating the tie would be in any way affected by the presence or absence of corrugations or a rail shoulder on the top surface of the plate?

Mr. Brown: The question is objected to as improper cross-examination unwarranted by the scope of the direct examination. The attention of the court is called to the fact that the witness has testified merely with respect to the three Wolhaupter patents in suit, "Exhibits Nos. 1, 2 and 3," and that the present question calls for answer relating to structures not necessarily therein described and calls for an answer respecting a hypothetical structure not identified in the question. The question is further objected to on the ground that it is immaterial whether or not the witness had in mind any such structure as is called for by the question or had ever seen any such construction.

A. I do not have in mind any structure in which the essential function of the projection on the lower surface penetrating the tie to prevent lateral movement of the plate is materially affected by the

presence or absence of corrugations or a rail shoulder on the top surface of the plate.

X Q. 26. And in making this answer you have particularly in mind, have you not, the tie-plates of the kind illustrated in
113 the Wolhaupter patents introduced in evidence?

A. Well, they are practically the only ones I had in mind.

X Q. 27. And it would not change the essential function of the rigid tie penetrating projection from the lower surface of the plate in preventing horizontal movement of the plate whether this projection were in the form of a rib or whether it was acute, rounded or square in section, or whether it was very much shortened so long as it was a rigid projection and actually penetrated the tie?

A. I do not like to answer such hypothetical questions with any degree of finality, but I can say that the essential function would probably be accomplished to a greater or less degree irrespective of the form of the projection. It might very well be that a certain form would accomplish the function to such a limited extent that that form would be practically inoperative. That is about as far as I care to go in answer to a question of that kind.

X Q. 28. And in your judgment in such a case as supposed, namely, a rigid tie penetrating projection on the lower surface of the plate, would accomplish the essential function of preventing horizontal movement on the plate irrespective of whether it penetrated the tie crosswise or lengthwise of the tie, would it not?

A. It certainly would to some extent.

X Q. 29. And the mere duplication or multiplication of such projection would in nowise affect the essential function although it might accomplish it to a greater degree?

A. Generally speaking I assume that that is true, although I would not care to guarantee that there would not be exceptions.

X Q. 30. You have no exceptions in mind, however?

A. No.

114 X Q. 31. Well, would the essential function of the rigid tie penetrating projections on the lower surface of the plate be materially affected or modified by the position of such projections on the tie-plate?

Mr. Brown: This line of questioning is objected to as improper cross-examination and also as incompetent for the reason that the witness has not qualified as a track expert and is not shown by the record to have actual knowledge of the subject inquired of.

A. What would be material is not for me to say, especially as I do not know what your proposed positions are. I can, however, say that the function would exist to some extent (although whether or not that extent is sufficient to be worthy of notice is another question), irrespective of the position, always provided of course that the projection actually penetrated the surface of the tie and was surrounded by sound material.

X Q. 32. Tell us in what way the function of a rigid tie penetrating projection on the under surface of a tie-plate in prevent-

ing horizontal movement of the plate would be affected or modified by its position on the under surface, if you can?

Mr. Brown: Last objection repeated.

A. Well, I can conceive that if a projection were located at one side of the plate only, the plate might be given a vibration that would quickly destroy all practical effect that projection would have.

X Q. 33. Why would it do this?

Mr. Brown: Same objection.

A. On account of the stress transmitted to the plate by the movement of the train.

X Q. 34. How close to the edge or side of the plate would the projection have to be placed in order to produce this last result?

Mr. Brown: Same objection.

115 A. It would, of course, be produced to the most marked degree if it were exactly at the edge. As it is moved toward the center the tendency would diminish.

X Q. 35. Then in case of one projection only of this character the ideal position for it on the tie-plate would be as near the center as possible?

Mr. Brown: Same objection.

A. Without having given the matter any practical consideration and on the first appearance that would seem to be true.

X Q. 36. And if the projection at the side were duplicated on the other side of the plate the objection which you have supposed would largely disappear would it not?

Mr. Brown: Same objection.

A. I should think so.

X Q. 37. What is the function of the corrugations, ribs, or flanges on the top of the tie-plate disregarding the shoulder flange, I mean corrugations or flanges on the top of which the rail rests

A. In general a function, which may or may not be the main one, is stated in the sentences found in lines 20 to 32 of page 2 of the specification of the first Wolhaupter patent, No. 538,809, which matter I quoted on my direct examination. (See p. 57.)

X Q. 38. Well, I want to know as a matter of fact your judgment as an engineer and expert the actual function of the corrugations, flanges or ribs on the upper surface of the plate on which the rail rests?

Mr. Brown: Last objection repeated, the witness having qualified only as a patent expert and not as a track expert.

A. It is set out in the portion of the specification to which I have referred to in the preceding question. It may be that
116 in some designs of tie-plates these corrugations are utilized in disposing of the material of the plate most advantageously to secure the greatest strength with the least weight of metal.

X Q. 39. These flanges or corrugations on the top of the tie serve to support the rail to obtain the requisite strength with the least amount of metal and to allow foreign substances like sand and water that would accumulate under the rail to readily escape. Is that correct?

A. As I understand your question, I think so.

X Q. 40. Do you know of any other function that the corrugations on the top of the plate would accomplish?

A. Not at present.

X Q. 41. Have these functions of the corrugations any affect upon or any relation to the functions or results of the projections on the lower surface of the plate, such as we have been describing and talking about?

A. All these functions are related in that they seem to be essential to produce commercial tie-plates, and the proper relation of the projections and the grooves is doubtless a matter of much importance from an engineering standpoint in producing a commercial article.

X Q. 42. Then it is your judgment that in order to produce a commercial tie-plate with top corrugations it is necessary that it have projections on the under surface of the plate to penetrate the tie?

A. That would depend a little on what you call commercial. It is my judgment that these are essential to produce the best tie-plate and the one that would doubtless be the only commercial one once the basic patents have expired.

X Q. 43. In your answer by the expression "these are essential" you refer to the presence of top corrugations and rigid tie penetrating projections on the bottom of the plate, do you?

A. Yes.

117 X Q. 44. Please tell us in what way the support of the rail on the corrugated surface and the elimination of foreign substances between the rail and the plate affect or modify the functions of the rigid tie penetrating projections on the bottom of the plate?

Mr. Brown: Last objection repeated.

A. I do not know that the one function modifies the other.

X Q. 45. What is the function or result of the shoulder flange, so-called, against which the side bottom of the rail rests or abuts on the tie-plate?

A. It is to prevent spreading of the rails.

X Q. 46. Or it might be phrased to prevent the lateral thrust of the rail?

A. It obviously would not prevent the thrust but would prevent the thrust from doing much damage.

X Q. 47. Well, then, to resist the lateral thrust of the rail?

A. That would be better.

X Q. 48. And in your judgment the function of the shoulder flange is to resist the lateral thrust of the rails?

A. Yes.

X Q. 49. Has this function of the shoulder flange any affect upon or connection with the functions of the corrugations, as corrugations?

A. I do not see that the one function directly affects the other function.

X Q. 50. Well, does either corrugation or shoulder flange in any way affect the function of the other as parts of the tie-plate?

A. Considering merely the function, I do not see that they would affect each other.

X Q. 51. Referring to the functions of the corrugations as supporting the rail, lessening the amount of material in the
118 plate while preserving strength and affording means to eliminate foreign substances between the rail and the plate, in your judgment would not the hollowing of the tie-plate or making a cavity underneath the rail so that the rail rests upon its side and there was a space toward the bottom center of the rail, produce the same results, namely, of supporting the rail, lessening the material while preserving the strength and enabling the foreign substances to be eliminated from under the rail?

A. I do not understand from your question what structure you have in mind, and cannot hazard an answer.

X Q. 52. I had in mind a structure in which the sides of the rail bottoms rested upon the plate surface and between the lines of contact the plate was hollowed out or excavated slightly crosswise of the plate and parallel with the rail so that underneath the center of the rail bottom there was a slight cavity and the center bottom of the rail was not in actual contract with the top surface of the plate, would not this structure at once support the rail, lessen the material in the plate without materially affecting its strength and eliminated the foreign substance between the bottom of the rail and plate?

Mr. Brown: Question is objected to for the reasons last stated and also because calling for the consideration of a hypothetical structure not disclosed to the witness.

A. I think if you will consider your question carefully, you will see that I cannot answer it without knowing exactly the details of the structure you have in mind. I do not propose to answer such an indefinite hypothetical question unless the court instructs me to do so.

X Q. 53. Do you understand the description given?

A. I have some sort of a concept in my mind but whether that is the same as you have is a matter that I cannot define and it is not fair to the court to expect me to answer questions in regard
119 to matters that may be differently understood by each of us. It is obviously a waste of time.

X Q. 54. The question of whether the interrogator and the person who is answering understand the same thing by the question is always at issue. I will ask you to answer the question as you understand it?

Mr. Brown: Last objection repeated.

A. I do not understand it sufficiently to answer it intelligently.

X Q. 55. Suppose instead of several corrugations crosswise of the the plate and tie parallel to the rail there were but one corrugation on the top of the tie-plate and the side bottom of the rail rested upon the sides of the corrugation, that is, at the place where the cavity of the corrugation cease-. Would such a structure as that accomplish practically the same functions as the corrugations described in the patents in issue?

Mr. Brown: Last objection repeated.

A. Not knowing what you have in mind I cannot say.

X Q. 56. Do you mean to say that you do not understand that description?

A. I mean to say that that description is so indefinite that it might describe two or more radically different structures, and inasmuch as it is always possible to have drawings made to the proper dimensions so that there can be no dispute. I do not see any sense in guessing.

X Q. 57. I will ask you again do you understand or have any conception of a structure from that description?

A. Yes, I can conceive of a structure based on that description, but it might be materially different from the one you have in mind.

X Q. 58. Please answer according to your own understanding and conception explaining as fully as you desire as to whether the structure which you understand from that description would
120 not perform the same function, at least in degree, as those of the corrugations described in the patents in suit and if not, why?

A. Such a structure might provide for the escape of foreign substances just as well, but in my judgment it would not support the rail so well, and in fact, I think it would be impractical.

X Q. 59. For what reason would it be impractical?

A. Because there would be no support for the rail directly beneath the central flange or web, and the great weight on the rail is transmitted directly down through this web, and to be practical a tie-plate should support the rail directly beneath this web.

X Q. 60. Look at this exquisitely beautiful drawing which is marked "Defendants' Exhibit No. 1," and see if you understand the construction therein shown, it being a section of a rail resting upon the tie-plate and tell us whether a construction of that kind would not at once support the rail, lessen the weight of the plate without materially affecting its strength and enable the elimination of foreign substances between the rail and plate?

A. You have a part marked "rail" that does not correspond in section with any rail that I have ever seen. If a rail were ever built like the one shown in the drawing it would still be open to the objection I noted in my last answer, as the rail would not be properly supported directly beneath its center.

X Q. 61. But crude as this sketch is, a structure of that kind in the tie-plate would support the rail, lessen the weight of the plate without materially detracting from its strength and enabling the

elimination of foreign substances between the rail and plate, would it not?

A. While you may have a theory to that effect, I don't think it would be practical. I venture to assume that if the defendants were to make their tie-plate in that shape the complainant would never molest them.

121 X-Q. 62. I want to know your judgment as an expert and engineer as to whether a structure of the kind indicated on that drawing would not accomplish the functions which I have indicated, support the rail, lessen the material in the plate without materially lessening its strength, and enabling the elimination of foreign substances between the rail and plate?

A. It might accomplish the last two functions mentioned but in my judgment it would not satisfactorily accomplish the first one.

X Q. 63. You mean to say that it would not sufficiently support the rail no matter how extended the surface contact between the bottom of the rail and the top of the plate might be and still leave a cavity sufficient to take away the foreign substances?

A. If the rail were of the ordinary design and the parts proportioned substantially as you have shown in your drawing, in my judgment the rail would be forced down to substantially fill the cavity under the stress of the train passing over it.

X Q. 64. Then what this structure, shown in the sketch would need to make it practical, would be a center support or projection engaging with the rail at about its center?

Mr. Brown: Last objection repeated.

A. That would unquestionably help.

Recess.

Counsel for defendants offers in evidence the sketch or drawing shown the witness and the same is marked "Defendants' Exhibit No. A."

122 Further cross-examination of the witness McElroy by Mr. Cooke.

X Q. 65. Mr. McElroy I call your attention to the following paragraph which appears in the Wolhaupter patent No. 538,809 and known as "Complainant's Exhibit No. 1," which paragraph appears on page 3 of the specification, lines 12 to 19, reading as follows:

"In all of the above named variations the principle involved is the same and each would embody the essential idea of my invention which consists in providing a plate on its underside with a series of stepped flanges or projections, that is to say, flanges or projections arranged on a diagonal line with respect to the rail flange."

What is your understanding of this paragraph to mean?

A. This paragraph has to be read in connection with the immediately preceding paragraph which begins as follows:

"It is obvious that the construction just described is susceptible

of many changes and the prime object of the invention still be attained."

The paragraph then goes ahead to describe some modifications, which are the "variations" referred to in the paragraph which you quoted. This shows that the paragraph you quoted has reference only to the second feature of the invention which is first discussed beginning with line 33 of page 2 of the specification, and which second feature I did not consider for the reason that it is not employed in defendants' tie-plate and my attention was not called to it in the questions proposed to me on direct examination.

The paragraph you quoted has nothing to do with the invention defined in claim 8 in controversy.

X Q. 66. Does not claim 8 specify that the tie-plate is
123 provided with devices on its underside which are more or less sharpened to penetrate and engage the tie and does not paragraph which I have quoted state that the essential idea of the invention in said patent consists of providing a plate having its underside provided with a series of stepped flanges or projections which flanges or projections are arranged on a diagonal line with respect to the rail flanges?

A. Yes, that is true; but that in no way affects the accuracy of the statement made in my answer to the preceding question, as there is nothing about claim 8 whatever to limit it to a construction in which the flanges or projections are "stepped" or "arranged on a diagonal line with respect to the rail flange." The draftsman of the claim seems to have intentionally made it as broad as possible in defining the structure of the tie engaging projections or flanges, as he has defined them broadly as "devices more or less sharpened adapted to penetrate and engage the tie."

I am absolutely certain that if you read the complete specification there was no intention on the part of the draftsman of it to apply the matter in the paragraph you quoted in lines 12 to 19 of page 3 of the specification to anything other than the so called "second feature of the invention," and I do not understand that claim 8 is concerned at all with this second feature.

X Q. 67. Do not the drawings in this patent No. 538,809 show the flanges on the under side of the plate arranged in a diagonal line with respect to the rail flange and what authority have you to ignore such a showing and the statement I have quoted as having no bearing on claim 8 of said patent?

A. The drawings show the flanges arranged as you say in your questions. My authority for concluding that claim 8 is not
124 limited to the diagonal arrangement of the ends of the flanges is that the inventor carefully described the operation of the flanges as tie penetrating means in the second column of page 1 of the specification, and says nothing whatever about the diagonal arrangement of the ends until he takes up that feature of the invention in what may be called the second part of his specification beginning with line 33 of page 2.

When it comes to the claims, he carefully includes this second feature of the invention in claims 1 to 7, and 14, and he carefully

excludes it from the remaining claims 8 to 13, so that I see no reason whatever for supposing that he intended claim 8 to be limited to a structure involving this "second feature of the invention."

X Q. 68. But in your discussion of claim 8 of this patent you ignored the showing of the drawings as to the under flanges of the tie-plate being stepped or on a diagonal line with respect to the rail flange and cut the paragraph I have quoted in the middle?

A. I do not understand why you state that I cut the paragraph you have quoted in the middle for the reason that I did not refer to it at all in my direct-examination. So far as the showing of the drawings is concerned, it is the most elementary patent law that you do not read into a claim a limitation that is not there expressed, especially when that limitation is made a feature of other claims, as in the case in claims 1 to 7, for instance. I think that a court would have difficulty in following your argument that claim 8 is limited to the stepped construction if they follow the ordinary rules of interpretation of a patent.

X Q. 69. Notwithstanding the inventor stated in the paragraph I have quoted that the essential idea of his invention was a series of stepped flanges you ignored the paragraph in your interpretation of this patent and of claim 8 therein, did you not?

125 A. I certainly did not ignore this paragraph, but I considered it carefully in connection with the complete specification, and decided, as any one else familiar with the English language would decide, that this paragraph evidently had reference only to the so-called "second feature of the invention." Beginning with line 33 of page 2 of the specification, he takes up the matter of this diagonal arrangement of the ends of the flanges and discusses how it works in the readjustment of the plate and from there the entire specification down through line 132 of the same page is concerned with the description of this second feature and how it is utilized in readjusting the plate. He then says that it is obvious that the construction just described (meaning thereby the diagonal arrangement of the flanges) is susceptible of many changes, and he describes how the changes may be made as follows:

"For instance, the under flanges may be divided, or instead of flanges they might be merely projections and the plate instead of having its end beveled might be square, and the under flanges alone be stepped; or but a single end of the plate need be stepped; or the flanges having one or more of their ends stepped might be applied to a flat plate or to the numerous other constructions of plates now on the market."

It seems perfectly obvious to me that all of these suggested changes have reference only to modifications of the structure employed to secure "the second feature of the invention, viz., "the ability to adjust the plate to take up any widening of the gage due to the lateral movement of the plate and rail." If he had intended that the feature of the stepped flanges or projections, that is to say, flanges or projections arranged on a diagonal line with respect to the rail flange, to be considered as the one and vital feature of his invention, he certainly would not have described it as "the

second feature of his invention" and he certainly would
126 not have carefully limited some of the claims to a structure embodying these stepped features and as carefully refrained from mentioning these in the remaining claims.

X Q. 70. Regarding this second feature of the invention do you find in any place in the specification of this patent No. 538,809 wherein these flanges on the under side of the plate are arranged in any other manner except on a stepped and diagonal line?

A. No, he does not describe them in any other way, but he is very careful while discussing the first part of his invention not to say anything about the stepped arrangement of the flanges, and no attention is called to this arrangement until he takes up the second feature of the invention in the paragraph beginning with line 33 of page 2 of the specification. And when he gets down to the claims, which after all furnish the *meets* and bounds for the invention, he carefully limits one set of claims to the diagonal arrangement, and says nothing about it in the other claims.

X Q. 71. But the inventor in said patent does give a long and detailed description as to these stepped or diagonally arranged flanges, does he not for instance, as you say, from line 33 of page 2 to line 132 of the same page and from line 2 to line 11 on page 3?

A. Yes, and if you want to be complete about the matter he refers to this feature, in my opinion, in lines 133 and 134 of page 2 and lines 1, and 12 to 19 of page 3. Turning back to page 1 of the specification the paragraph beginning with line 50 also refers to this feature.

X Q. 72. In giving your views as to the defendants' plate No. 15, infringing on the six different claims of the Wolhaupter patents in suit, has your opinion been based solely on these patents or on the prior state of the art within your knowledge?

127 A. It is practically based on these patents.

Cross-examination of the witness McElroy closed.

Redirect examination by Mr. Brown:

R. D. Q. 73. Please look at "Complainant's Exhibit No. 16," photograph and compare it with the tie-plate which I now hand to you and state whether or not the photograph appears to be a photographic reproduction of the said tie-plate?

A. The upper portion of the "Exhibit No. 16" appears to represent exactly the tie-plate you now hand me in top view. If the exposure for both portions was taken at the same time, I assume the lower half of the picture must represent another tie-plate, which is obviously rolled from the same pattern and is made in exactly the same way. On further examination I am pretty thoroughly satisfied that the lower part is made from this same plate, as the scale markings are all the same and there are some accidental indentations that are the same so that the exposures of the two parts of the "Exhibit No. 16" must have been made at different times.

R. D. Q. 74. Please compare the tie-plate which you still have in your hand with the tie-plate heretofore offered in evidence and

identified as "Exhibit No. 15" and state whether or not they appear to be the same construction?

A. They evidently are the same construction and appear to have been made by the same set of rolls, as some of the lettering rolled on the upper surface of the plates is the same. For all practical purposes these two plates are identical.

Mr. Brown: Complainant's counsel states that the photograph "Exhibit 16" was actually taken from the tie-plate just submitted to the witness instead of from the tie-plate heretofore marked
128 "Exhibit 15," and, in order that there may be no misunderstanding or confusion, formally withdraws "Exhibit No. 15" tie-plate, and substitutes therefor, with the consent of defendants' counsel, the tie-plate now submitted to the witness and referred to in his last answer, the same to be marked and considered as "Complainant's Exhibit No. 15, Defendants' Infringing Tie-Plate."

R. D. Q. 75. In view of the substitution of the tie-plate now marked "Exhibit 15," for the tie-plate heretofore in evidence as "Exhibit 15," do you desire in any manner to change or modify your deposition given in this case and if so in what respect?

A. No.

Redirect examination closed.

Examination of the witness McElroy closed.

JOHN HOWARD McELROY.

Complainant's counsel here gives timely notice that, as at present advised, he will at his convenience examine as witnesses on behalf of the complainant, among others, Charles F. Quincy of New York City; F. R. Coates of Boston, Massachusetts; Benjamin Wolhaupter of New York City and J. H. Wallace of San Francisco.

And thereupon an adjournment was taken to Thursday, June 17, 1909, at 10 o'clock a. m.

G. R. WILKINS,
Notary Public.

129 CHICAGO, ILLINOIS, June 17, 1909.

Met pursuant to adjournment.

Present: Counsel as before.

And thereupon EDWIN H. BELL, a witness produced on behalf of the complainant, having been first duly cautioned and sworn, upon oath, testifies as follows in answer to interrogatories by Mr. Brown:

Q. 1. Please state your name, age, residence and occupation.

A. Edwin H. Bell; I am 34 years of age; City of Chicago, Illinois; Vice-President of The Railroad Supply Company, the complainant herein.

Q. 2. Where is the office of this company?

A. The office of this company is located in the Bedford building, No. 215 Dearborn street, City of Chicago, Illinois.

Q. 3. How long have you been connected with the complainant's company?

A. I have been connected with the complainant company since December, 1898.

Q. 4. How long have you been Vice-President?

A. I was appointed Vice-President of the complainant company in 1906.

Q. 5. State as fully as you like what opportunities you have had for familiarizing yourself with the business of the complainant company and the details thereof.

A. I would state that my position as vice-president of the complainant company gives me an authority in the management of the details of the running of its business next to the president. For example, in the absence of the president I have full and complete charge of the complainant company's affairs. I have access to all its records and books and am constantly examining the
130 same in the carrying on of its business. In the absence of the president the policy of the company is directed by me. I have full and complete charge of the sale and the manufacture of all tie-plates manufactured and sold by the complainant company. I have originated the systems of keeping records. All of the above makes me fully capable of understanding the details of the business and its records. All salesmen, inspectors, engineers and clerks are directly under my supervision and report to me in the execution of the business.

Q. 6. Is the manufacture and sale of tie-plates by the complainant company conducted under letters-patent and, if so, what patents?

A. Yes, under a number of letters-patent which are owned and controlled by our company, principally the Wolhaupter patents, under which this suit is brought.

Q. 7. Please look at "Complainant's Exhibits Nos. 1, 2 and 3" and state what they are.

A. These are copies of some of our Wolhaupter patents, being the ones which I have referred to on which this suit is brought.

Q. 8. To what extent is the business of the complainant in tie-plates conducted under the Wolhaupter patents in suit, "Exhibits Nos. 1, 2 and 3"?

A. I would state that we consider the Wolhaupter patents in suit referred to one of our most valuable assets and that a very large percentage of the business done is done under these patents.

Q. 9. What opportunity have you had to acquaint yourself with the tie-plate business in general and with the manufacture and sale of tie-plates and their practical installation and use upon railroads?

A. I have previously testified that I have full charge of the manufacture and sale of the tie-plates sold and manufactured by
131 the complainant company. I would add in addition to this that it has also been my duty to promote and to see that the sales of the Railroad Supply Company are increased. To make my answer full and complete I would like to divide it into different sections and I will discuss first the manufacturing and designing of tie-plates. When an order for tie-plates is received by The Rail-

road Supply Company it is first submitted to me. These orders are often lacking in almost all their essential details, for instance, they may specify simply the number of tie-plates desired and the weight of rail under which they are to be applied. It is my business to be thoroughly familiar with the design of plate that is wanted or contracted for, the specific analysis of steel that is required for each customer, the particular kind of punching that may be standard or desired by that road and in fact, I must be in a position to place this order with the mill who are to execute the same so that it may be done correctly. This requires that I associate with the mill officials from the man who designs the rolls, the mill superintendent, the rollers and the men who have charge of the shears and punches. As we manufacture under contract at many different mills and as I am called upon to make regular visits to these mills frequently to see that our business is executed properly I have become thoroughly conversant with the manufacturing of our plates. I have at times suggested changes in processes to secure better results and by a study of this subject have gained a great deal of knowledge.

The second division of my knowledge of the tie-plate business is along the commercial line of the sale and promotion of tie-plates manufactured and sold by the complainant company. We estimate that there are approximately thirteen hundred [1,300] railroads in the United States. It is part of my duties to see that we are thoroughly conversant and familiar with the situation on
132 each one of these railroads as far as it pertains to their purchasing devices such as tie-plates, etc., which we manufacture and sell. I would be obviously unfit for my position if I were not able to talk intelligently and to understand thoroughly all the questions that might arise in connection with the use and sale of tie-plates and in order to fit myself to properly fill this position I have, from the time that I became connected with the complainant company, made a study of the art of tie-plates.

I have had at my disposal all the records and literature of the Railroad Supply Company and also the records and literature of the Q. and C. Company to whose business the Railroad Supply Company succeeded. This data goes back to the earliest users of tie-plates, gives the reasons and necessity for their use and in fact shows the general development of the art. I have kept abreast of the times and the current literature.

I instituted a department in connection with our business which we call the editorial department. We have in charge of this department a man of superior intelligence whose sole business is to read carefully all the leading trade journals, periodicals, catalogues and other literature that may be issued in connection with the subject of track and of tie-plates. This information is submitted to me and I am, therefore, sure that as far as possible, all of this kind of literature has passed through my hands.

I have also studied the question of tie-plates in their actual service, have watched their installation, have examined tie-plates in actual track. These examinations have not been locally particularly but have been made over the entire country, both in the far East and

the far West, all of which has been done to acquaint myself with this device, how it acts in the track, the functions and different
133 features that the tie-plates perform and as to whether they are performing the functions for which they were designed, that is, were they holding the track to gage, were they preventing tie-wear, spike-wear and all the other essential features of a tie-plate.

In addition to the above I have collected and have in my office, I should judge, one of the largest collections, or what I would call a museum of tie-plates. These plates have been collected from time to time in different ways and represent to a certain extent the evolution of the tie-plate from its inception and earliest use. From the above it can be seen that I have made a particular study of this line of the business of the complainant company and have thoroughly familiarized myself with the manufacturing, selling and promotion of the device, together with its uses and the benefits to be derived by the use of tie-plates so that I will be in a position to present the subject intelligently to the roadmasters, the engineers, general managers and other officials, all of whom are usually interested where large purchases of tie-plates are made.

Q. 10. State whether or not you are a mechanical or civil engineer or have had any technical school education along these lines.

Mr. Cooke: Objected to as immaterial, irrelevant and incompetent unless it is to be shown that the witness is called as an expert in this matter.

A. I am not a mechanical or civil engineer and have had no technical school education along these lines.

Q. 11. Please look at the two pamphlets which I now hand you and state if you know what they are?

A. The yellow covered pamphlet marked "Exhibit 21" is a catalogue issued by the Railroad Supply Company illustrating tie-plates manufactured by that company. The green covered cata-
134 logue marked "Exhibit 22" is also a catalogue illustrating one of the forms of the Wolhaupter types of plate, also giving certain information as to tests.

Mr. Brown: The two catalogues referred to by the witness are introduced in evidence as "Complainant's Exhibit No. 21, Complainant's Yellow Covered Catalogue" and "Complainant's Exhibit No. 22, Complainant's Green Covered Catalogue." (For illustrations, see back of book.)

Mr. Cooke: The catalogues are objected to as immaterial, irrelevant and incompetent as they do not show the tie-plates in question.

135 Q. 12. Please look at the small booklet which I now show you and state what that is.

A. The small booklet which you have handed me marked "Exhibit 23," is a publication issued by the Railroad Supply Company and is called "Track." This booklet was first published, I think, some time prior to 1898 and had but a few pages. It has grown from that to the extent of 140 pages. It describes, among other things, the different forms of the Wolhaupter types of tie-plate and

other plates manufactured by the complainant company. It gives useful information as to the punching and ordering of tie-plates together with general information that is useful to the operating and maintenance officials and employes. This information was collected and compiled particularly for this publication which is used as an advertisement and the book has an immense circulation.

Mr. Brown: The book identified by the witness is offered in evidence as "Complainant's Exhibit No. 23, 'Track.'"

Mr. Cooke: Same objections.

Q. 13. At the time you began your association with the complainant company what style or type of tie-plate was it selling?

Mr. Cooke: Objected to as immaterial.

A. At the time that I became associated with The Railroad Supply Company they were manufacturing and selling two distinct types which we will call for short the Wolhaupter type of corrugated top and the flat top. By tops, I mean the tops or rail bearing surface of the plates.

Q. 14. Please look at the illustrations which I now hand to you and state if you know what they represent.

A. "Exhibit 24" and "Exhibit 25," as I understand it, represent the Wolhaupter type of corrugated top.

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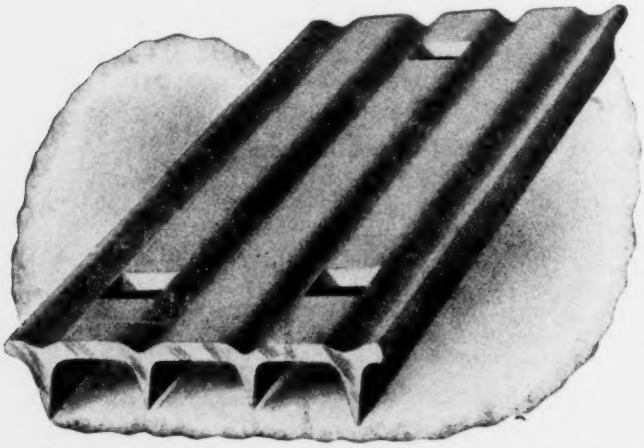
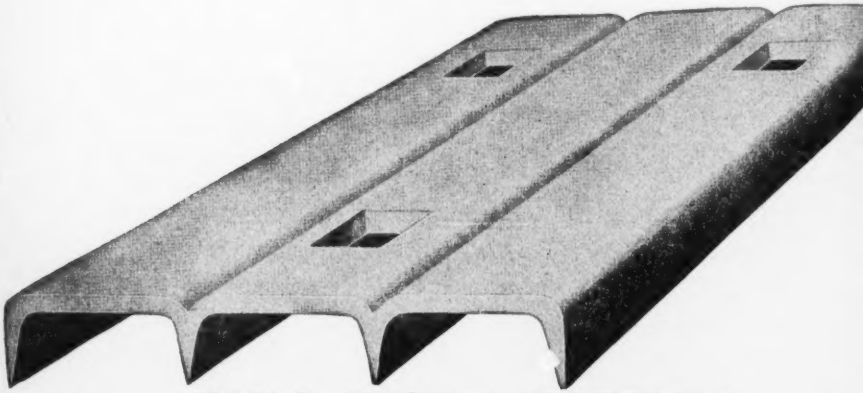


"Exhibit No. 24," Illustration Wolhaupter Tie-Plate.

Q. 15. Were they given any distinctive or trade-names?
A. Yes, "Exhibit 24" was called the Wolhaupter, "Exhibit No. 25" was called the Q. & W.



"Exhibit No. 25," Illustration Q. & W. Tie-Plate.

137 Mr. Brown: These two illustrations are offered in evidence and are marked, respectively, "Complainant's Exhibit No. 24, Illustration Wolhaupter Tie-Plate" and "Complainant's Exhibit No. 25, Illustration Q. & W. Tie-Plate."
Mr. Cooke: Same objections.

Q. 16. Please look at "Complainant's Exhibit No. 21, Yellow Catalogue," and state whether or not it illustrates the two tie-plates that are illustrated in "Complainant's Exhibits Nos. 24 and 25."

Mr. Cooke: Objected to as immaterial.

A. "Complainant's Exhibit No. 24," the Wolhaupter type of corrugated tie-plate, is illustrated on page 3 in "Complainant's Exhibit No. 21, Yellow Catalogue."
"Complainant's Exhibit No. 25, the Q. & W. Plate," which is a type of the Wolhaupter corrugated top tie-plate, is illustrated on page 7 of "Complainant's Exhibit No. 21."
Q. 17. Please look at the illustration of a tie-plate which I now show to you, state what it is and whether or not it is illustrated in the yellow catalogue "Exhibit No. 21."

Mr. Cooke: Same objections.

A. The illustration you hand me marked "Exhibit 26" is commonly known as a flat top plate and is illustrated in "Exhibit 21, Yellow Catalogue" of the Railroad Supply Company on the 9th page.

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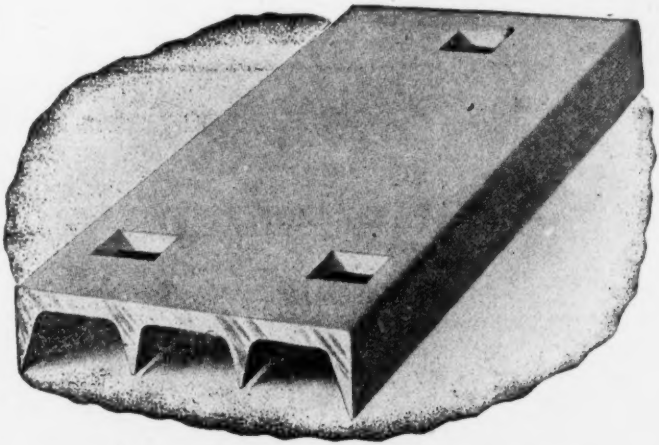


"Exhibit No. 26," Servis Flat Top Tie-Plate.

Mr. Brown: The illustration is introduced in evidence as "Complainant's Exhibit No. 26, Servis Flat Top Tie-Plate."

Q. 18. Do I understand that the complainant manufactures and sells the various styles or designs of tie-plates shown in its publications marked herein "Complainant's Exhibits Nos. 21, 22 and 23"?

Mr. Cooke: Objected to as leading.

A. They do.

Q. 19. How many different tie-plates does the complainant manufacture and sell?

A. The complainant company have a roll equipment which will produce over forty-one [41], different sizes and designs of plates of the general type of the Wolhaupter corrugated top and the flat top types. We have duplicate sets of rolls for some one section or for various sections. These rolls are located at our different mills.

139 For example, we might receive a large order for the Wolhaupter type of plate, we will say from the Harriman lines. Under ordinary conditions it might be possible for us to roll or to start rolling this particular design of plate that might be called for on this order at five different mills in five different sections of the country. This gives us an immense capacity and the ability to serve our customers better than any other one concern.

Q. 20. You have used the word "section" in your last answer apparently with two meanings, one relating to a geographical definition. In what sense did you use the word "section" in connection with "rolls"?

A. We frequently use the word "section" in expressing the different designs of tie-plates that are manufactured, or the cross-sections of the tie-plates under discussion.

Q. 21. Then do I understand correctly that for certain shapes or configuration or cross-section of tie-plates, your company has duplicate sets of rolls so that you can roll simultaneously at two or more different mills that particular design or cross-section of tie-plate?

A. Yes, sir.

Q. 22. You are familiar, I suppose, with the various tie-plates that are on the market at the present day, are you?

A. I am.

Q. 23. Is there any general division into which you can classify tie-plates of the various types that are on the market?

A. Yes, I would classify them in two general divisions, the corrugated top, Wolhaupter type (by tops I mean the rail bearing surface); the other division would be the flat tops or that portion of the plate where the rail bearing surface is flat.

Q. 24. Mr. Bell, please give us some idea of the extent
140 of the business of the complainant company, and in answering this question tell us how many tie-plates of the flat top pattern have been manufactured and sold and how many tie-plates of the Wolhaupter or corrugated type of tie-plate have been manufactured and sold.

A. In answer to this question, I would state that as nearly as I can remember, without reference to actual data, there has been sold by the Railroad Supply Company and its predecessor, Q. & C. Company, a total of one hundred and eighty-eight million [188,000,000], tie-plates. Of this number there was nearly one hundred and forty-four million [144,000,000], of the Wolhaupter corrugated top type of plate and approximately forty-four million [44,000,000], of the flat top form of plate. If I remember correctly, these figures are with the exception of the sales of the flat top form of plate during the year 1898. Basing my statement on the above total number of the different types of plates sold, the percentages are as follows: approximately 77 per cent of the total number sold were of the Wolhaupter type of corrugated top plates, and approximately 23 per cent of the total number sold were of the flat top type of plate.

Q. 25. Can you give us an illustration of the relative sales by years?

A. I have prepared from the records of the Railroad Supply Company and the records of the Q. & C. Company, its predecessor, a blue print chart which I hold in my hand made up on cross-section paper. The heavy vertical columns, running to the right, indicate the years as is clearly shown by the numerals at the bottom of the chart. The horizontal heavy lines indicate the quantities as indicated by numerals on the left-hand side of the chart. The red line indicates
sales of tie-plates having corrugations in or upon their upper
141 surface. The blue line (this word "blue" should be changed to "white") indicate sales of tie-plates having flat upper surfaces.

These records which I have referred to show that the first sale of tie-plates made by the Q. & C. Company, who was succeeded by the Railroad Supply Company, of flat top plates was made in 1890. During that year it is shown there were 341,257 of this type of

plate sold. The sales for 1891 show an increase, the total number being 941,059. From this year until 1894 the increase was slight and it gradually grew until the year 1896, during which year they showed sales of 7,361,633 plates of the flat top pattern.

The sales of the flat top form of plate from this point gradually decreased. I make this statement not taking into consideration the year 1898, as I previously explained I did not have the data for that year. However, the chart clearly shows that from the high point of 1896 of approximately 7,300,000 plates, the sales gradually decreased, there only being slight fluctuations of an increase from time to time. The smallest number of this form of plate sold after 1890 was in the year 1907. You will note that there were 341,257 plates of the flat top form sold in 1890 and in 1907 the total sales of the flat top plate were only 438,396, which was increased during the year 1908 to 1,468,048.

The corrugated top form of tie-plate indicated on the chart by the red line was first manufactured and sold in 1895. During this year they started with a sale of 302,261 plates. It will be noted that the first commercial years of both plates started with approximately the same number of plates. The second year of its introduction, that is, the year 1896, shows a slight decrease in its sales, but from that point the growth of the business and the sales of the plates were enormous and it will be noted that these sales —
142 from 108,784 plates of the Wolhaupter corrugated top pattern in the year 1896, to 2,817,759 in the year 1897, and again to 7,517,618 in the year 1898, or four years after its introduction and from this it goes to the enormous quantity during the year 1899 of 18,521,996 plates.

Even this, as the chart shows was not the largest number of plates sold of the Wolhaupter type of corrugated top tie-plates for any one year, but that during the year 1905 the total number of plates of this latter type sold by the complainant company were 22,779,626. The fluctuations in the numbers sold per year to a certain extent may be accounted for by the commercial conditions, but even with that the increase in the sales of this form of plate is gradual and healthy.

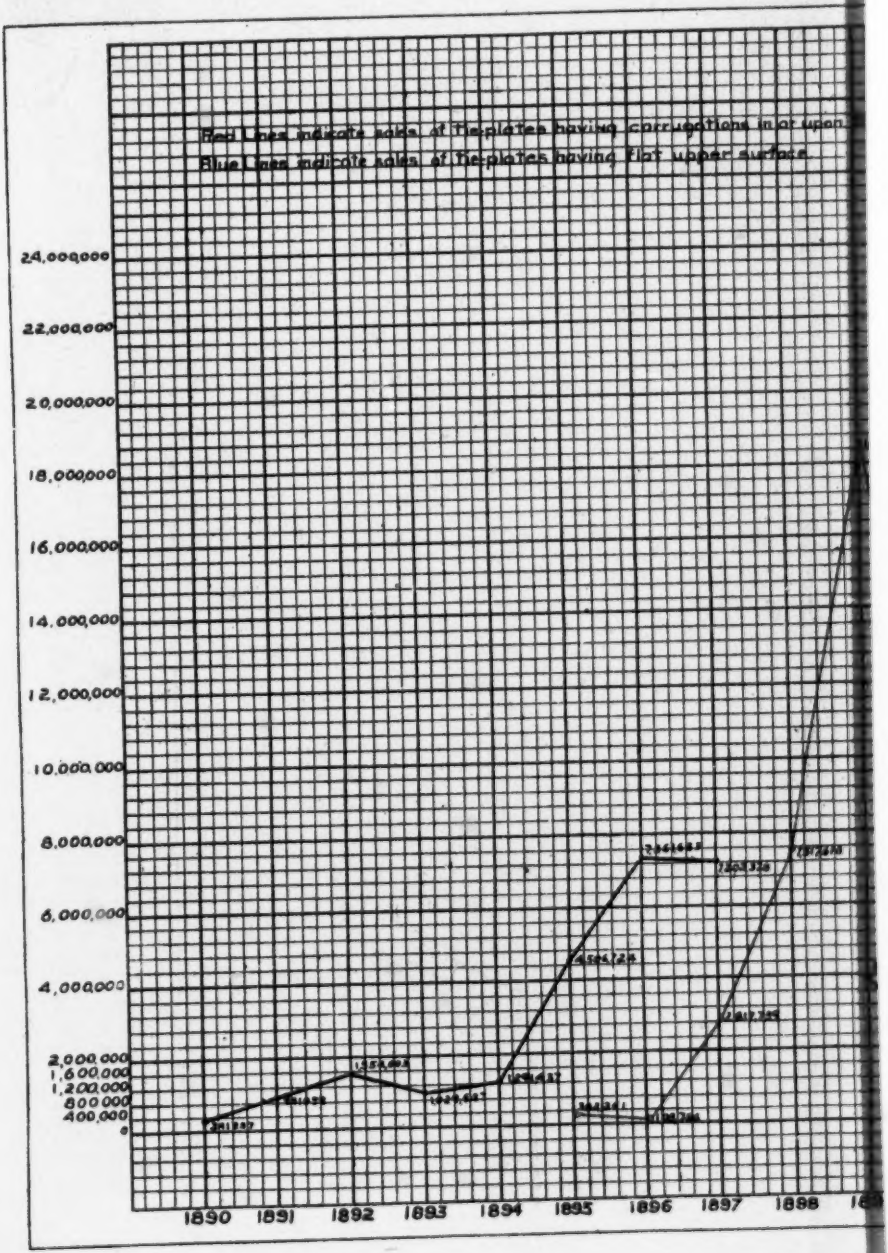
I make this statement for the reason that, although there was a business depression during the year 1908, we still show sales of the Wolhaupter type of corrugated top tie-plates of 10,507,672 against only 1,468,048 of the flat top plate, all of which shows that although the sales of the flat top form of tie-plate in the year 1896 aggregated over 7,000,000 it has gradually decreased while the sales of the Wolhaupter type of corrugated top tie-plates have gradually increased, the total percentages of the Wolhaupter type of the corrugated top plates being approximately as testified to by me previously. That is, approximately 77 per cent of the total number being of the Wolhaupter corrugated top type, and approximately 23 per cent of the total number being of the flat top form.

Recess.

Mr. Brown: The blue-print chart referred to by the witness in his last answer is introduced in evidence and is marked "Complainant's Exhibit No. 57, Complainant's Sales Chart."

Mr. Cooke: Objected to as immaterial.

(Here follows diagram marked pages 143 and 144.)


Red Lines indicate sales of Tie plates having corrugations in or upon
Blue Lines indicate sales of Tie plates having flat upper surface
24,000,000
22,000,000
20,000,000
18,000,000
16,000,000
14,000,000
12,000,000
10,000,000
8,000,000
6,000,000
4,000,000
2,000,000
1,600,000
1,200,000
800,000
400,000
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1890
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1898

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

THE RAILROAD SUPPLY CO. vs. THE MART STEEL COMPANY and GUILFORD S. WOOD } No. 29,294.

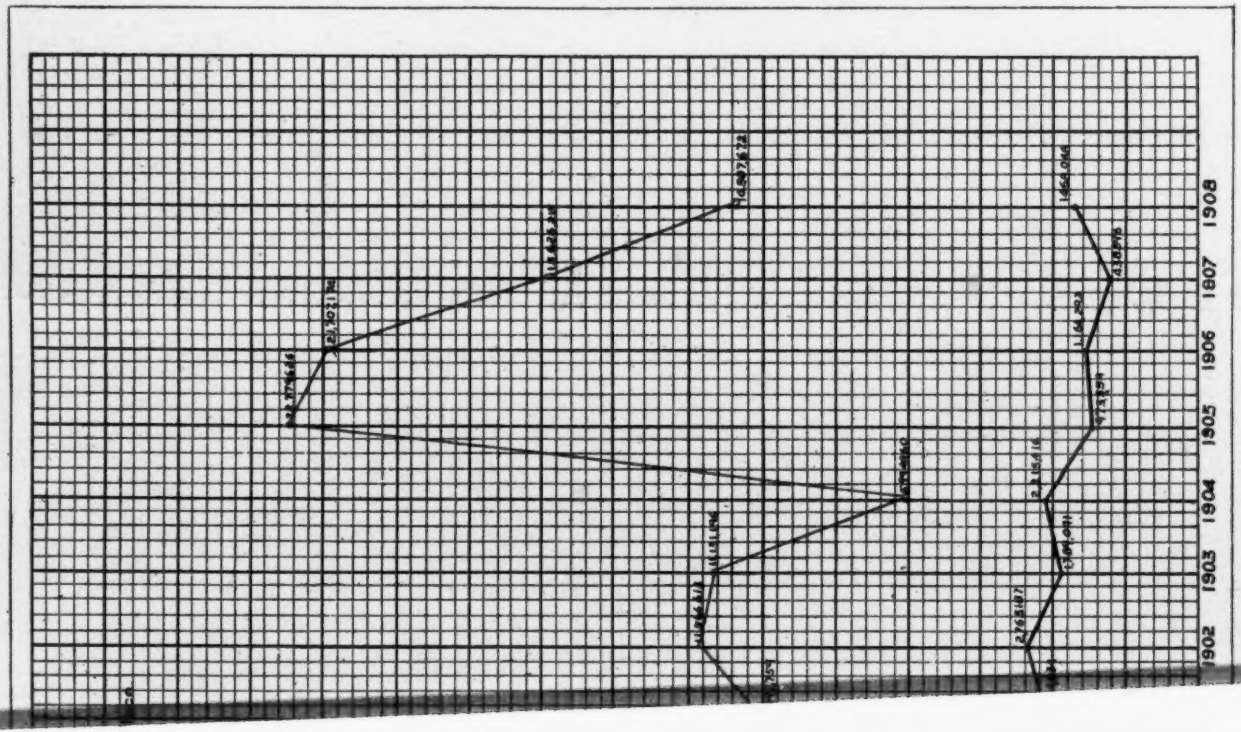
IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

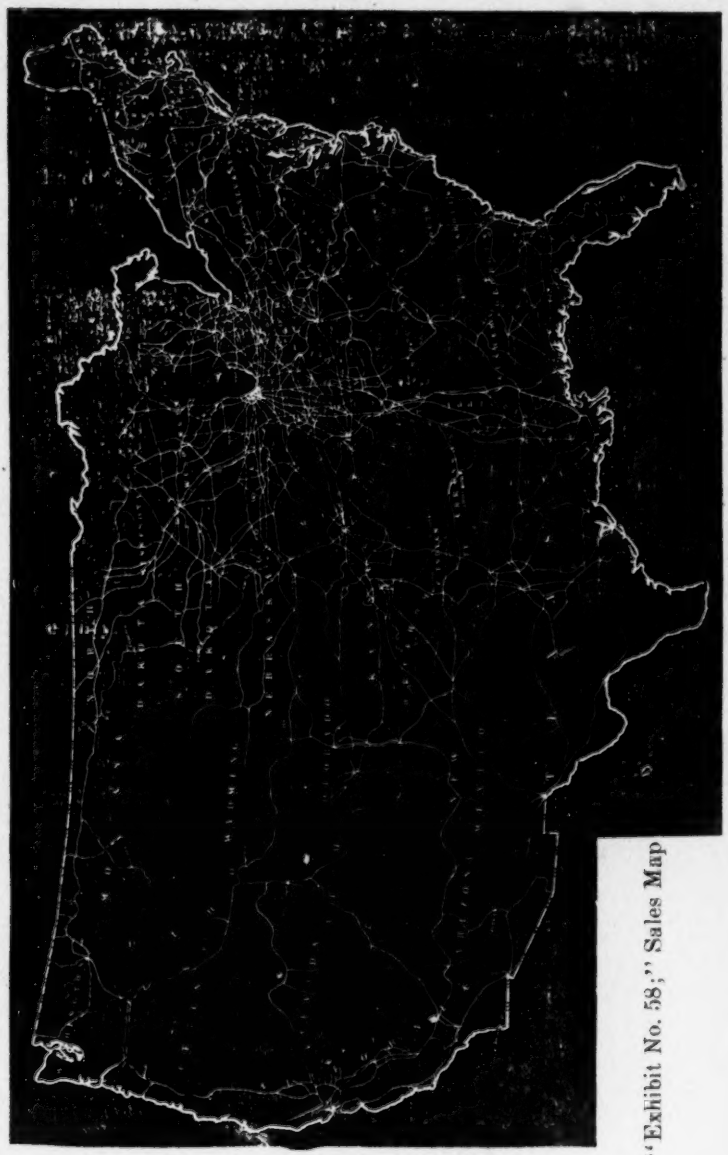
THE RAILROAD SUPPLY CO. vs. THE ELYRIA IRON AND STEEL COMPANY } No. 7,668.

"Complainant's Exhibit No. 37, Complainant's Sales Chart".

June 17th, 1909.

Notary Public.





"Exhibit No. 58;" Sales Map

145 Q. 26. Where and over what extent of territory have these tie-plates been sold by the complainant?

Mr. Cooke: Same objection.

A. All the white lines on the outline map of the United States except those indicating the geographical divisions of the states and rivers, indicate the lines of the railroad companies in the United States to whom the Railroad Supply Company and the Q. & C. Company, to whose business it succeeded, have sold tie-plates of the types previously described, that is, the Wolhaupter type of corrugated top tie-plates and the flat top plates.

Mr. Brown: The outline map referred to by the witness is here introduced in evidence and marked "Complainant's Exhibit No. 58, Sales Map."

Mr. Cooke: The offer is objected to as obviously immaterial and for the further reason that it does not seem to show anything of interest in this case.

(Here follows map marked page 146.)

147 Q. 27. I wish you would look at the illustration of complainant's tie-plates already introduced in evidence as "Complainant's Exhibits 12, 13 and 14," tell us what they represent and when the respective tie-plates were first made by the complainant company?

A. "Complainant's Exhibit No. 12" represents the Wolhaupter type corrugated top, Harriman Lines, tie-plate. I understand that this plate was first made by the complainant company in the early part of 1905. I think the first rolling was in February of that year.

(See p. 29.)

"Complainant's Exhibit No. 13" represents the Wolhaupter type of corrugated top tie-plate and I think was first made or rolled during the year 1904. (See p. 30.)

"Complainant's Exhibit No. 14" represents the Wolhaupter type corrugated top tie-plate which was first made by the complainant company in 1908. (See p. 30.)

Q. 28. Have you any trade-mark or designation for the tie-plate shown in "Exhibit No. 12"?

A. This is shown in our catalogue and is called the corrugated top shoulder flat bottom tie-plate.

Q. 29. For what line was it rolled?

A. For the Harriman Lines particularly.

Q. 30. Do you ever refer to that particular section of tie-plate as the Harriman plate?

Mr. Cooke: Objected to as leading.

A. We do.

Q. 31. Were any samples of that particular plate manufactured by the complainant prior to the date of the first rolling of these plates which you said was in February, 1905?

Mr. Cooke: Same objection.

A. I think there were.

Q. 32. And for whom was the tie-plate shown in "Com-
148 plainant's Exhibit No. 13" manufactured and sold by the complainant?

A. The tie-plate shown in "Exhibit No. 13" was manufactured for the Atchison, Topeka & Santa Fe Railroad.

Q. 33. And were any plates of this particular design or section made by the complainant before the tie-plates shown in this "Exhibit No. 13" were rolled in the year 1904, as you have stated?

A. It is quite probable that there were but I could not answer the question definitely without reference to records.

Q. 34. Now, please look at the "Exhibit No. 14" and state where the first plates, as shown by this exhibit, were made by the complainant company which you said was in 1908.

A. The tie-plate shown in "Complainant's Exhibit No. 14" was first made by the complainant company at its factory located on Carroll avenue, in the City of Chicago.

Q. 35. And how many plates were made like that "Exhibit No. 4" at or about that same time?

(See p. 30.)

A. There were two plates manufactured.

Q. 36. What became of those two plates, if you know?

A. The first plate was handed by me personally to Mr. W. E. Hodges, purchasing agent of the Santa Fe System, and I understand that the second plate was delivered to his office by messenger.

Q. 37. Did you see the second plate at or about the time of its manufacture?

A. No, sir.

Q. 38. State whether or not, after delivering the first plate to Mr. Hodges, you afterwards saw that plate at any time, and, if so, state where and about when.

149 A. I do not recall that I saw the plate after it was delivered to Mr. Hodges.

Q. 39. Now, please look at "Exhibit No. 18" and state what tie-plate it represents, when the first tie-plate was made and where and any name or designation that you may have given to it at the time.

A. The tie-plate as shown in "Complainant's Exhibit No. 18" represents the Wolhaupter type of corrugated top tie-plate having a rail sustaining shoulder with ribs on its bottom and corrugations on the bottom of the plate between the ribs, and we would designate it as the Wolhaupter type of corrugated top tie-plate. To the best of my knowledge this plate, as shown in "Complainant's Exhibit No. 18," was made I think in the year 1904. It is an aluminum casting cast from a wooden model or pattern which I understand was made by Benjamin Wolhaupter. To the best of my knowledge it was made in the City of Chicago.

Q. 40. Did you ever see that aluminum tie-plate and, if so, when and where?

A. I have the aluminum casting in my possession from which this picture was taken.

Q. 41. On what did you base your statement that the tie-plates like "Exhibit No. 13" were made in 1904 and that those like "Exhibit No. 12" were made in 1905, and those like "Exhibit No. 14" were made in 1908 and that the aluminum cast-plate like "Exhibit No. 18" was made in 1904?

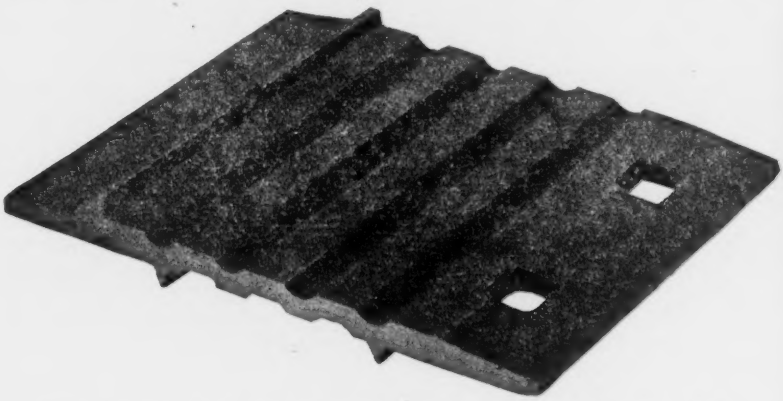
A. I base my opinion that the tie-plates as — "Complainant's Exhibit No. 14 was made in 1908 from the records of the Railroad Supply Company, which records show the execution of this order.

I base my opinion that the tie-plate as shown on "Complainant's Exhibit No. 12" was made prior to the time of the first rolling from my recollection of having models of this plate cast. I can not remember the exact date without reference to the records.

150

I base my opinion in reference to the "Complainant's Exhibit No. 13" having been manufactured prior to its rolling upon the fact that it is customary to do this. I have no actual knowledge of this having been done.

I base my opinion in reference to "Complainant's Exhibit No. 18" as having been made in 1904 from the fact that during that year the Atchison, Topeka & Santa Fe were considering the change in their design of tie-plate. I understand that several parties made inspection trips over the Santa Fe and the different designs of plate were submitted to that company, and I believe and to the best of my knowledge I think, that this plate was made and submitted to the Santa Fe at that time. Other witnesses can testify to this fact.



"Exhibit No. 18," Complainant's 1904 Aluminum Sample Plate.

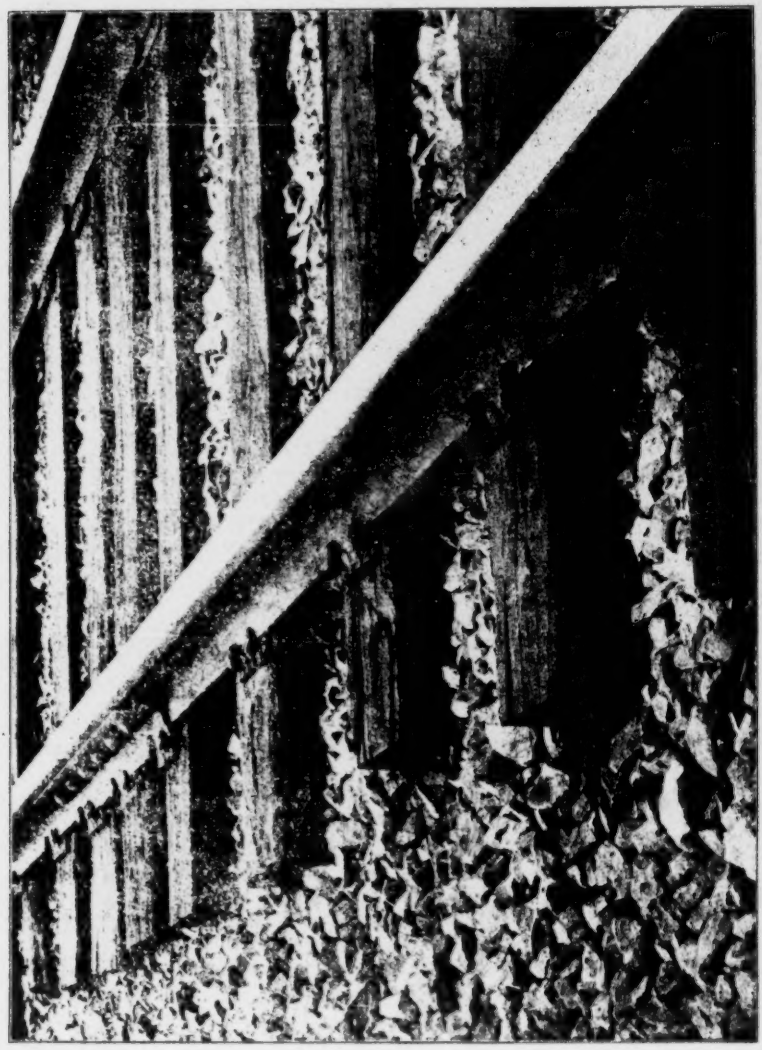
151 Mr. Brown: "Complainant's Exhibit No. 18" heretofore introduced has been marked simply as "Complainant's Exhibit No. 18," and the notary is now requested to add to the title of that exhibit the following words and figures "Complainant's 1904 Aluminum Sample Plate."

Q. 42. Please tell us what is a tie-plate and what are its uses and if you have illustration showing a tie-plate in actual use in the track, produce the same.

Mr. Cooke: Objected to as immaterial and as within common knowledge.

A. A tie-plate is a piece of metal on the top of a railroad tie and under the flange or base of a railroad rail. I have here a picture which shows a piece of track. The ties are laid on crushed stone ballast, the tie-plates are in place under the rail and spiked down to the sides with two spikes on the outside or non-gage part of the track and one spike on the inside. It will be noted that the tie-plate can be clearly seen that it is of the Wolhaupter type having corrugations on its upper or rail bearing surface. It also has a rail sustaining shoulder and with devices on its under side to penetrate the tie.

(Here follows diagram marked page 152.)



"Exhibit No. 27," Tie-Plate in Use.

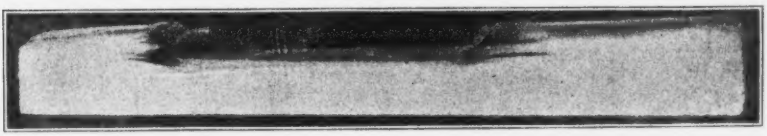
153 This piece of track is on that portion of the New York Central and Hudson River Railroad *Company* known particularly as the "electrical zone" and is at about a point at High Bridge, New York. These plates are standard on this road and they have used in the neighborhood of three to four million of this particular Wolhaupter type. The tie-plates are used for three principal reasons, first, to prevent the destruction of the tie by compression and by the mechanical wear of the rail; second, to prevent the railroad rails from spreading under traffic. Their third use is to prevent the throat cutting of spikes by abrasion or otherwise.

Mr. Brown: The illustration of the tie-plate in use on track referred to by the witness is introduced in evidence as "Complainant's Exhibit No. 27, Tie-Plate in Use."

Q. 43. Please explain more fully the use of a tie-plate to prevent tie-wear and if you have any illustrations which you desire to use in connection with your answer you may produce them.

Mr. Cooke: The last offer and the foregoing question is objected to as immaterial.

A. The fibres of a soft wood tie, and under severe conditions the fibres of a hard wood tie, have not sufficient strength to resist compression and the sawing action of the rail under traffic. I have here an illustration which shows clearly how the porous rings of a tie are cut and to a certain extent the tie destroyed by compression under the rail.



"Exhibit No. 28," Showing Compression Tie-Wear.

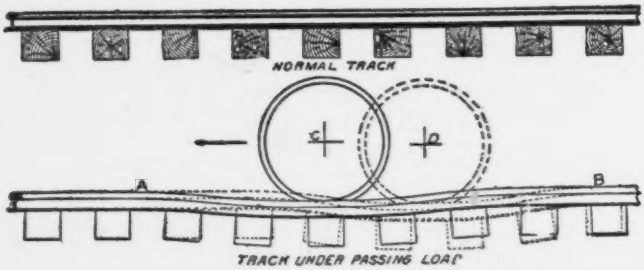
154 This piece of tie apparently shows a considerable amount of cutting which might have been accounted for by the sawing action of the rail. However, when it was closely examined it was found that there were the same number of ring growths in the tie directly under the rail as there were at a point where the rail did not come in contact with the tie. This shows conclusively that ties are damaged by compression and that the wood was compressed under the flange or base of the rail. I understand that this was a soft wood tie.

Mr. Brown: The illustration referred to by the witness is introduced in evidence as "Complainant's Exhibit No. 28, Showing Compression Tie-Wear."

The next cause of tie-wear, and I believe one of the principal ones, is the sawing action of the rail by its motion under a passing

train. This motion is longitudinal of the rail. The cause of this longitudinal motion is first the sudden passing of a heavy load on the ties, such as a train passing over the track. When it passes a given point it pushes the ties down into the ballast to a certain extent. The tie directly under the passing locomotive would be depressed into the ballast as the first trucks pass over it and as the succeeding wheels of a locomotive and train pass a given point the tie rises and falls alternately as it is depressed by the wheels and released again by their passage.

This causes or creates a "wave motion" in the track as the train proceeds and the rail is alternately drawn forward and backward grinding and cutting away the fibres of the wood, the rail sinking deeper and deeper into the tie. To this should also be added the natural spring of the rail which helps to increase the wave motion. This is fully illustrated in the picture which I have showing a normal track with ties and the rails laid on top of them and
155 their positions without a load. It also shows the track under a passing load and illustrates the action of the track as described.



"Exhibit No. 29," Illustrating Wave Motion of Track.

Mr. Brown: The illustration referred to by the witness is introduced in evidence as an exhibit and marked "Complainant's Exhibit No. 29, Illustrating Wave Motion of Track."

To explain the results of this wearing of the fibres of the tie by compression and by the mechanical motion of the rail on the tie I have an illustration showing the effect of this rail eating on a soft wood tie. The illustration covers a tie which was not protected by the tie-plate and also shows a piece of a tie which was not protected by a tie-plate and also the end of the tie that was protected by a tie-plate. These ties were removed from the track of the Atchison, Topeka & Santa Fe Railroad near Willow Springs, Illinois. I understand they were in service three years. It can be clearly seen in the tie that has been cut by the rail that the destruction of the tie has been almost complete. These ties were cedar.

156

"Exhibit No. 30," Cedar Tie Showing Tie-Wear.

Mr. Brown: The illustration referred to is introduced in evidence as "Complainant's Exhibit No. 30, Cedar Tie Showing Tie-Wear."

I also have an illustration which shows the effect of rail eating on hardwood ties. The ties shown in this illustration I understand were in service three years under practically the same track conditions. They were in the tracks of a terminal in the City of Chicago.

157

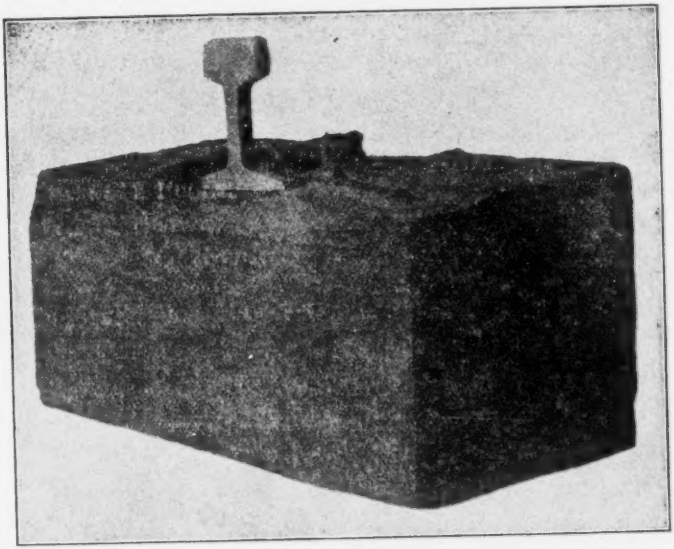
"Exhibit 31," Oak Tie Showing Tie-Wear.

The timber of these ties was perfectly sound but it will be noted that the tie which was not protected by a tie-plate has been rail eaten and that the tie which was protected by a tie-plate is practically intact. These ties were oak.

Mr. Brown: The illustration referred to by the witness is offered in evidence and marked "Complainant's Exhibit No. 31, Oak Tie Showing Tie-Wear."

I have another illustration showing one end of a redwood tie which is very soft which I understand was in service 14 months. This tie was unprotected by a tie-plate. Note the evident cutting of the tie caused by compression in the longitudinal motion of the rail as previously explained. It will be noted that a small sawed cross-section of a rail has been placed on that portion of the upper surface of the tie which has been cut or worn away by the mechanical action of the rail or by compression.

158

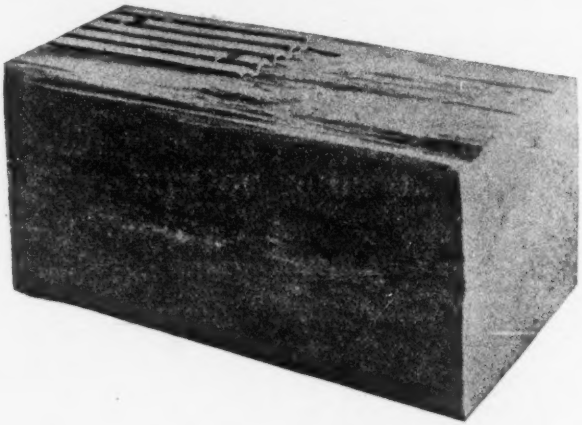


"Exhibit 32," Redwood Tie Showing Tie-Wear and Canting.

This small cross-section used in connection with this photograph was evidently placed there to illustrate or to show more clearly that the tendency of the rail cutting by the rail on the tie is to cut it deeper on the outside or nongaged side of the base or flange of the rail than it is to cut it on the gage side of the base or flange of the rail. This illustrates what I will explain later in reference to the canting of the rails in the track.

Mr. Brown: The illustration referred to by the witness is introduced in evidence as "Complainant's Exhibit No. 32, Red-Wood Tie Showing Tie-Wear and Canting."

I have an illustration which shows the other end of the same tie as shown in "Exhibit No. 32" which was protected by a tie-
159 plate of the Wolhaupter corrugated top design of plate. This demonstrates clearly how a tie-plate will prevent the rail eating of ties.



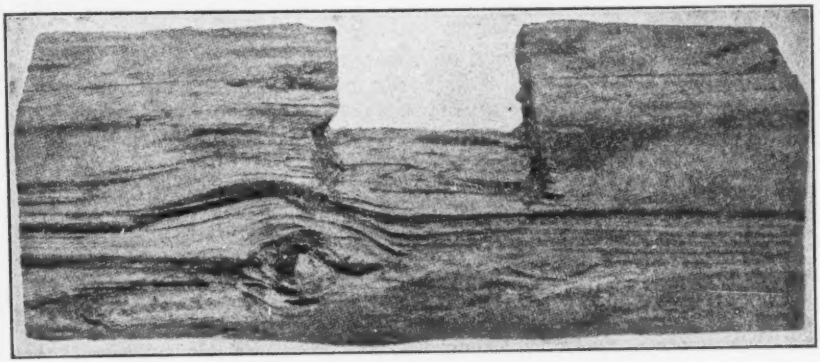
"Exhibit No. 33," Protected End of Redwood Tie Shown in Complainant's Exhibit No. 32."

I understand this tie was in service 14 months, one end of it was badly damaged, the other end of it was protected and was practically intact. If both ends of these ties had been protected by the Wolhaupter type of corrugated tie-plate the length of the life of the tie would have been materially increased.

Mr. Brown: The illustration last referred to by the witness is offered in evidence as an exhibit and identified as "Complainant's Exhibit No. 33, Protected End of Redwood Tie Shown in Complainant's Exhibit No. 32."

I also have an illustration of a cypress tie which clearly illustrates excessive rail eating. I understand that this tie was removed from the tracks of the Illinois Central Railroad Company and that the tie though old was perfectly sound. I mean by that that it was not decayed.

160



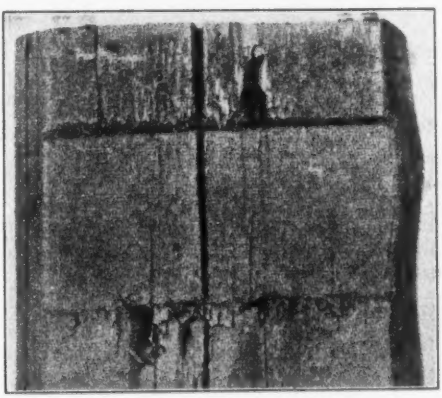
"Exhibit No. 34," Illinois Central Cypress Tie Showing Tie-Wear.

This simply illustrates further a different wood than those shown previously that is used as ordinary track ties. It is quite evident that had a tie-plate been used on this tie, the length of its life would have been materially increased.

Mr. Brown: The illustration last referred to is offered in evidence as "Complainant's Exhibit No. 34, Illinois Central Cypress Tie Showing Tie wear."

I also have an illustration of what I understand is commonly called the Lodgepole Pine Tie. I understand that this tie was treated with zinc chloride treatment to prevent its decay. This tie was in service, I understand, one year and shows clearly the effect of the mechanical wear of the tie by the rail.

161



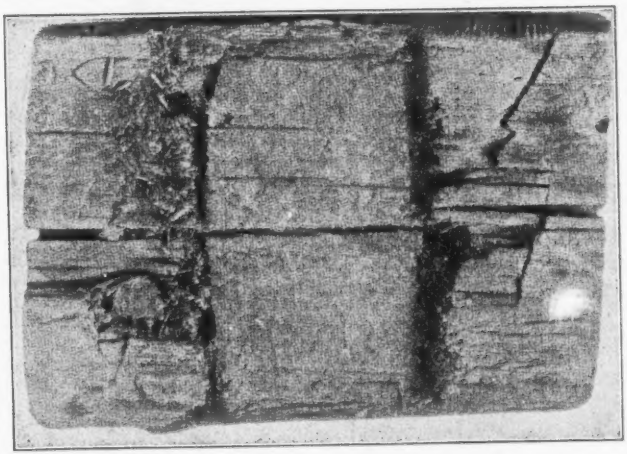
"Exhibit No. 35," Pine Tie Showing Tie-Wear, One Year Service.

Mr. Brown: The illustration last referred to is offered in evidence as "Complainant's Exhibit No. 35, Pine Tie Showing Tie-Wear, One Year Service."

I also have an illustration of a tie which is of the same wood as "Exhibit No. 35" which was in service two years. This tie also clearly shows the effects of the mechanical action of the rail on the tie.

Mr. Brown: The illustration referred to by the witness is offered in evidence as "Complainant's Exhibit No. 36, Pine Tie Showing Tie-Wear, Two Year Service."

162



"Exhibit No. 36," Pine Tie Showing Tie-Wear, Two Year Service.

Mr. Cooke: All the foregoing answer and the exhibits offered therein are objected to as obviously immaterial.

And thereupon an adjournment was taken to Friday, June 18, 1909, at 10:30 o'clock in the forenoon.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, June 18, 1909.

Met pursuant to adjournment.
Present: Counsel as before.

Direct examination of the witness Bell resumed by Mr. Brown:

Q. 44. You have spoken of track spreading. Please explain what this is and in doing so you may make reference to illustrations if you so desire.

(Here follows diagram marked pages 163 and 164.)

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION
OF THE NORTHERN DISTRICT OFILLINOIS.

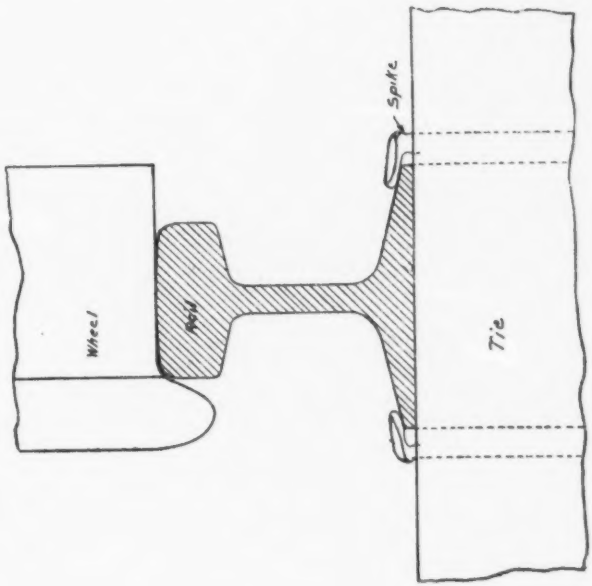
--**--

The Railroad Supply Company :
vs.)
The Hart Steel Company and : No. 29,294.
Guilford S. Wood)

"Complainant's Exhibit No. 37, Normal Position Rail on Tie without Tie-Plate".

June 18th, 1909.

Notary Public.



Mr. Reed: Objected to as immaterial, irrelevant and incompetent and as not based on any qualification on the part of the witness.

A. A soft wood tie, and under severe conditions a hardwood tie, es not give sufficient resistance to the outside spikes, by outside ikes, I mean the spikes that are on the non-gage side of the rail, prevent them from being pushed or forced back through the fibres the wood. When this occurs the rails spread and a wreck is able to occur. I have an illustration which shows a tie with a rail n top of it spiked down into place showing also a view of the car heel on top of the rail. This shows the normal position of tie, pikes, rail and wheel. It will be noted that there is no tie-plate nder the flange of the rail and on top of the tie.

Mr. Brown: The illustration referred to by the witness is introduced n evidence and marked "Complainant's Exhibit No. 37, Normal osition Rail on Tie Without Tie-Plate."

Mr. Reed: Same objections and motion to strike out answer on ame grounds.

To explain the forces and loads which are applied by passing traffic rom the wheels to the rails and from the rails to the ties and to the pikes, I would call attention to illustration that shows the tie, the ailroad rail spiked on top of same and with a view of a wheel on top of the rail.

The arrow "A" shown in this sketch indicates the force which is applied to the rail head which is the direct vertical ne caused by the weight of the train and the tendency of this force s to crush the tie. The arrow "B" shown on this sketch indicates the orce which is applied from the flanges of the wheel by the sway of he train. It will therefore be seen that the tendency of the load as hown by arrow "A" is to crush the tie and the tendency of the force as shown by arrow "B" is to move the rail outwardly. These two forces combine and throw the greatest strain in the direction of arrow "C" which I will describe as a downward and outward thrust. That his is true is shown by the illustration of an actual tie cut by the rail in track service and referred to and shown in "Complainant's Exhibit No. 32."

Mr. Reed: Same objections to question and answer and motion to strike out on same grounds.

Mr. Brown: The illustration referred to by the witness is offered in evidence and identified as "Complainant's Exhibit No. 38, Illustration Showing Load Forces."

Mr. Reed: Same objections and motion to eliminate load forces on same grounds.

I would further explain the tie cutting by an illustration which I have which shows clearly the manner in which tie-cutting may occur. The original position of the rail was at "A A." It will be noted that the rail has cut to a point at "B B" and that the cutting

is not even. This illustration is to demonstrate that when a rail cuts into the tie more on the outside or non-*en*gaged side of the track than on the gaged side of the rail cants, the gage is widened and the sway of the train becomes greater as the cutting increases. This naturally increases the loads and forces as referred to in "Complainant's Exhibit No. 38."

(Here follow diagrams marked pages 167 to 170.)

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION
OF THE NORTHERN DISTRICT OFILLINOIS.

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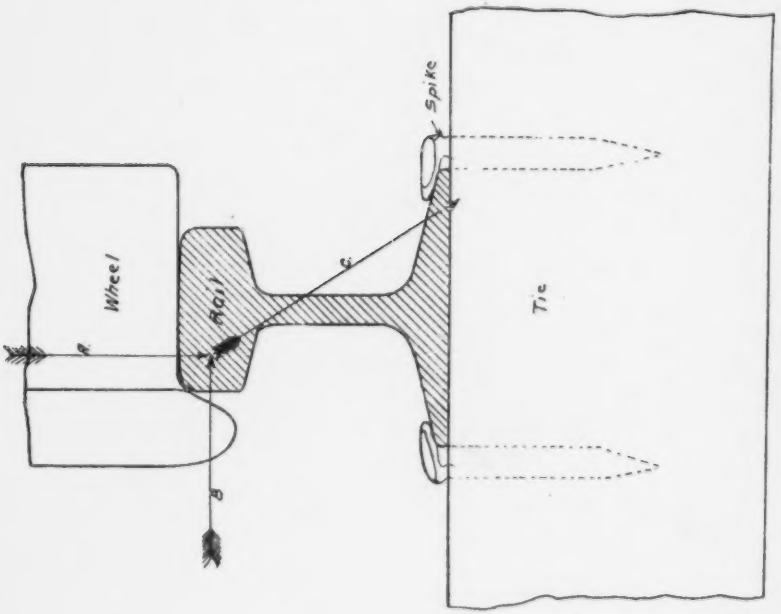
The Railroad Supply Company :
vs.)
The Hart Steel Company and : No. 29,294.
Guilford S. Wood)

"Complainant's [illegible] No. 38, Illustration Showing
Lo[illegible]ces".

June 18th, 1909.

G. B. Wilkins
Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

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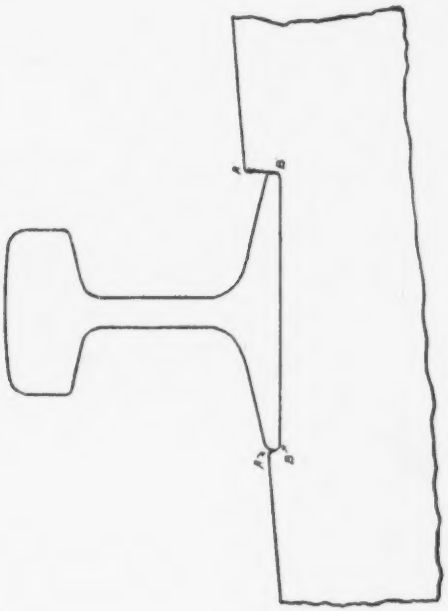
The Railroad Supply Company :
vs.) No. 29,294.
The Hart Steel Company and :
Guilford S. Wood)

"Complainant's Exhibit No. 39, Illustration Showing Rail Canting and Tie Cutting".

June 18th, 1909.

Notary Public.



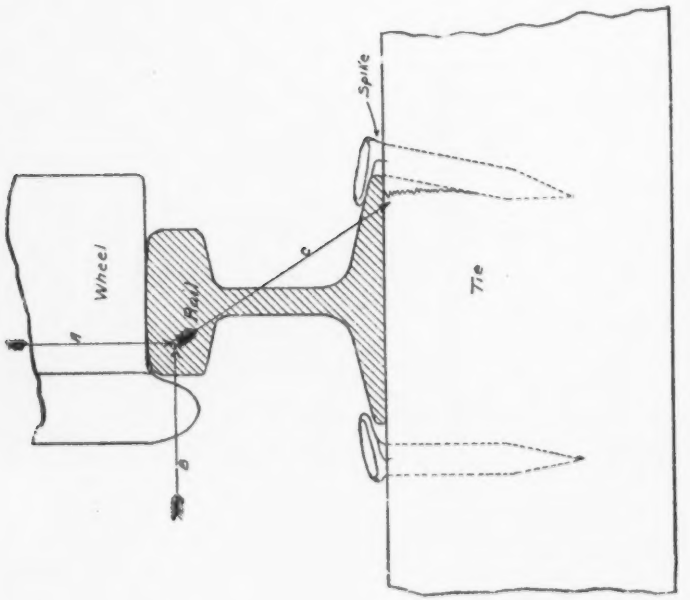
IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

The Railroad Supply Company :
vs.) No. 29,294.
The Hart Steel Company and :
Guilford S. Wood)

"Complainant's Exhibit No. 40, Illustration Showing Rail and Spike Movements".

June 18th, 1909.

C. B. Wilkins
Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

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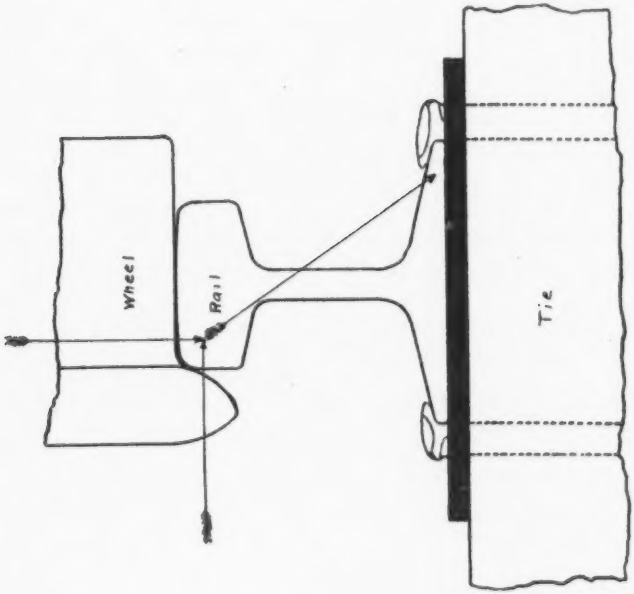
The Railroad Supply Company :
vs.) No. 29,294.
The Hart Steel Company and :
Guilford S. Wood)

"Complainant's Exhibit No. 41, Illustration Showing Spikes Bound by Tie-Plate."

June 18th, 1909.

Notary Public.



171 Mr. Reed: Objected to on the same grounds, also on the ground that the same is theoretical not based on any actual showing. Motion to strike out on each of the grounds.

Mr. Brown: The drawing referred to by the witness is introduced in evidence and marked "Complainant's Exhibit No. 39, illustration Showing Rail Canting and Tie Cutting."

Mr. Reed: Same objections.

I also have an illustration showing clearly a tie with a rail on top of it, with a wheel on top of the rail. The arrows "A," "B" and "C" indicate the forces exerted by passing traffic on the rail as previously explained. This illustration shows how the spike is forced back through the fibres of the wood of the tie under the [illegible] "C" which is a combined load indicated from the arrows "A" and "B." It will be noted that when this occurs the rail is forced away from the spikes on the inside or gage side of the track, that the gage is widened and if this occurs wrecks will occur.

Mr. Reed: Objections and motion repeated.

172 Mr. Brown: The illustration referred to by the witness is introduced in evidence and marked "Complainant's Exhibit No. 40, Illustration showing Rail and Spike Movements."

In order to correct this difficulty it was found necessary to use a tie-plate and at first the simplest form of plate was used. I have an illustration of a tie with a tie-plate on top of it punched with holes to receive the spikes with a rail spiked down in its proper position on top of the plate, and with a wheel on top of the rail. It will be noted that the spikes being backed by the plate on both sides of the rail both spikes are used to hold the rail in line. In other words the spikes pull against each other and there is a resistance of not only the outside spikes but also the inside spikes to resist the spreading action of the rail under traffic.

Mr. Reed: Same objections.

Mr. Brown: The illustration referred to by the witness is offered in evidence as "Complainant's Exhibit No. 41, Illustration showing Spikes Bound by Tie-Plate."

Q. 45. In referring to the uses of a tie-plate you mention spike-wear. Please state just what this is and you may, if you like, illustrate the same by drawings or the like?

A. I show an illustration of four spikes which illustrates quite clearly the wear of spikes in track. This is commonly called throat cutting of spikes. I would explain that this throat cutting usually occurs by abrasion by the movement of the rail on the tie under traffic as previously explained.

(Here follow diagrams marked pages 173 to 176.)

177

"Exhibit No. 42," Illustration Showing Spike-Wear.

Mr. Reed: Objections repeated. Motion to strike out answers on the same grounds.

Mr. Brown: The illustration referred to by the witness is introduced into evidence and marked "Complainant's Exhibit No. 42, Illustration Showing Spike Wear."

To further illustrate how this occurs I have an illustration of a tie with a rail and wheel showing how the rail has eaten into the tie. As the tie is worn away the flange of the rail drops down below the head of the spike and the wave motion of the rail and track causes a friction between the edge of the flange of the rail and the sides of the spike causing them to wear as is already illustrated.

Mr. Reed: Same objections. Motion to strike out on same grounds.

178 Mr. Brown: The illustration referred to by the witness is offered in evidence and the same is identified as "Complainant's Exhibit No. 44, Illustration showing Tie and Spike Wear."

I also have an illustration of a tie taken from the street car tracks of the Chicago City Railway in May of 1909 which illustrates the throat cutting of spikes that has been previously explained and also the wear of the tie under the rail. The use of tie-plates under these conditions would prevent the throat cutting of the spike as explained.

Mr. Reed: Same objections. Motion to strike out on same grounds.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

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The Railroad Supply Company :
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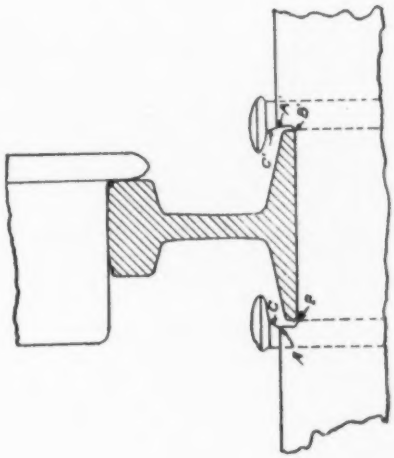
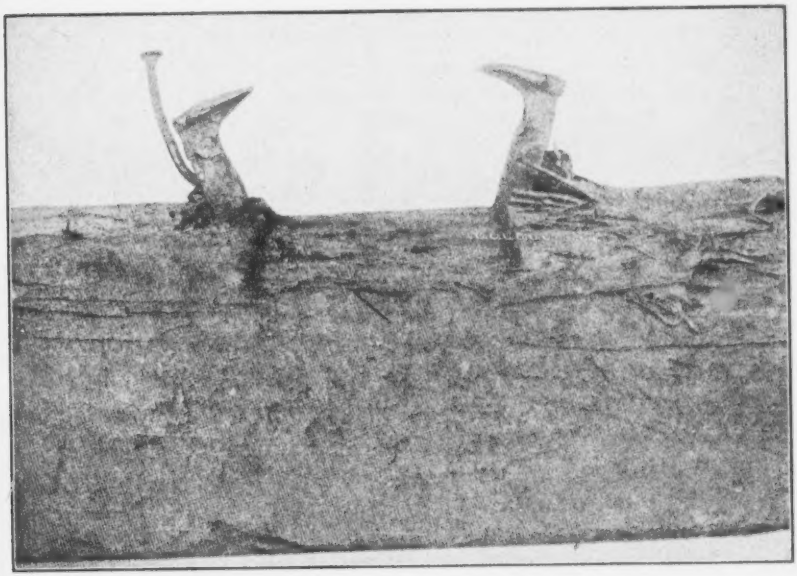
The Hart Steel Company and :
Guil ord S. Wood)

"Complainant's Exhibit No. 44, Illustration Showing Tie and Spike-Wear".

June 18th, 1909.

Notary Public.





"Exhibit No. 43." Illustration Showing Tie and Spike-Wear.

(Here follows diagram marked pages 179 and 180.)

181 Mr. Brown: The illustration referred to is offered in evidence and the same is identified as "Complainant's Exhibit No. 43, Illustration Showing Tie and Spike Wear."

Q. 46. What is the first tie-plate used in the United States of which you have any knowledge and state what kind of a plate it was and when and where it was used?

A. The first plate of which I have any knowledge was a perfectly flat top, flat bottom piece of metal and was used for experimental purposes by the Pennsylvania Railroad Company in 1870.

Q. 47. Now please describe the various tie-plates that have appeared upon the market from time to time since the introduction of that first plain flat top tie-plate, giving in your answer what you consider to be the advantages or disadvantages and also giving illustrations of the same if you have them. In other words, give us a statement of the commercial evolution of the tie-plate?

Mr. Cooke: Objected to as immaterial.

A. In answer to this question I would state that in my study of the art of tie-plates I find it necessary in order to answer this question intelligently to classify tie-plates in two general divisions, one of them being what I have previously designated as the flat top form of plate and the other division as the Wolhaupter corrugated top form of plate. To explain and analyze these plates I will first explain in relation to the tops or rail bearing surfaces of the tie-plate. The first plate, as I have previously testified, was a plate having a perfectly flat top or rail bearing surface. I have an illustration which shows this plate which has already been introduced in evidence as "Exhibit No. 41." These plates did not prove satisfactory although they were better than no tie-plates at all. It was found that they wore out or ground out the tops by the motion of the rail,

182 this mechanical motion of the rail having the same effect on the tie-plate as it had on the tie. While this type of tie-plate prevented to a certain extent the throat cutting of spikes still it was found under certain conditions that it did not prevent it altogether.

The next change in the form of the top of the tie-plate was the addition of a rail sustaining shoulder as shown in illustration which I have. This rail sustaining shoulder was added to the top of the flat plate to further prevent the throat cutting of spikes, and to assist the spikes in holding the track to gage. This plate still had the objection of the wear of the top of the plate as previously explained and was expensive on account of its excess weight.

Mr. Brown: The illustration referred to by the witness is offered in evidence as an exhibit and marked "Complainant's Exhibit No. 45, Showing Tie-Plate with Rail Sustaining Shoulder."

Mr. Cooke: Objections repeated to the offer.

The next change in the rail bearing surface or top of the tie-plate was to make the plate with corrugations on its top or rail bearing surface. This plate was first manufactured and sold by the Rail-

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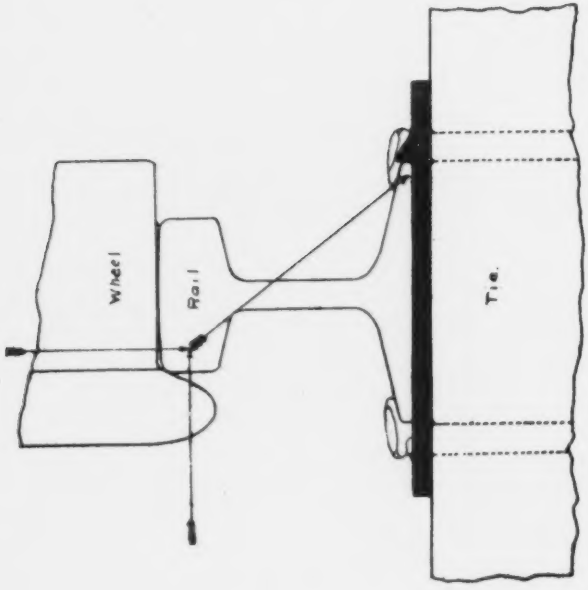
June 18th, 1909.

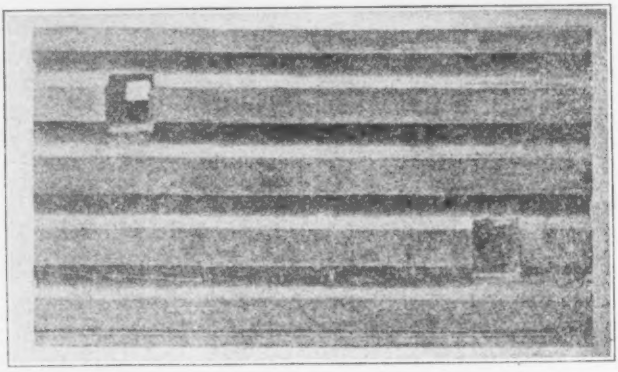
C. Wilkins
Notary Public.



road Supply Company. As I have previously stated the wave motion of the rail under traffic acts on the top of the tie-plate the same as the wave motion of the rail on the top of the tie. In the case of the flat top plate there is no outlet for sand or grit or other foreign material to escape between the rail and the top of the plate.

I would further explain that the wave motion of the rail sucks sand and grit between the bottom of the flange of the rail and the top of the plate and as stated in the case of a flat top plate there is no way for this foreign material to escape and the wave motion
185 of the rail acting on the top of the plate grinds it out. I have an illustration of the corrugated top plate manufactured and sold by The Railroad Supply Company and it will be noted that the corrugations shown on this plate are designed to receive the sand and grit that may be sucked between the bottom flange of the rail and the top of the tie-plate by the wave motion of the rail. It has been found in actual track service that these grooves or corrugations do collect the sand and grit and prevent the rapid wear of the top of the plate and also give a rail bearing surface to support the rail. By the construction of a plate of this design we have a maximum life of the tie-plate with a minimum amount of metal used.

(Here follows diagram marked pages 183 and 184.)

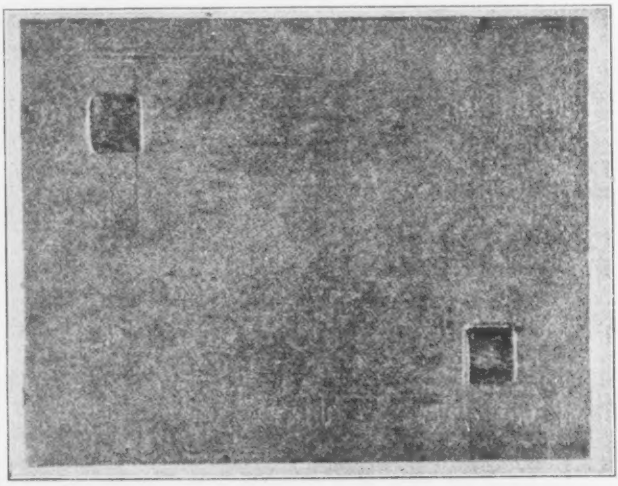


"Exhibit No. 46," Wolhaupter Tie-Plate with Corrugations on Top Surface.

Mr. Brown: The illustration referred to by the witness is offered in evidence and marked "Complainant's Exhibit No. 46, Wolhaupter Tie-Plate with Corrugations on Top Surface."

Mr. Cooke: Objections repeated to the offer.

186 I also have an illustration which shows the comparative wear in actual service of the flat top form of plate in comparison with the Wolhaupter type of corrugated top plate, "Exhibit No. 46." Please note that the flat top form of plate is worn under the base of the rail and its edges while the Wolhaupter type of corrugated top plate shows practically no wear. These plates had the same track service.

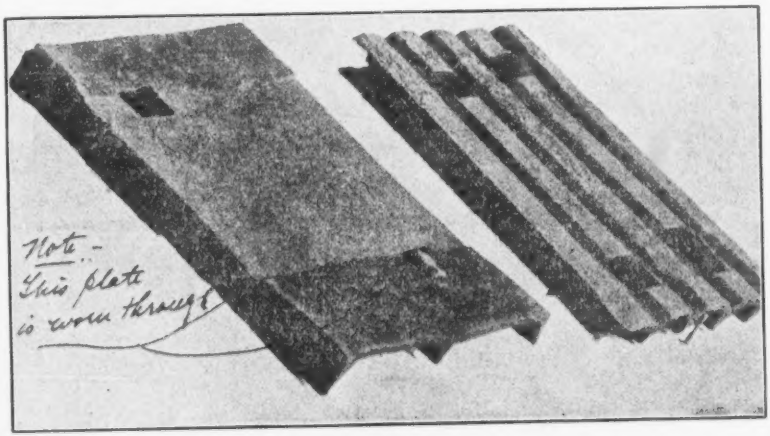


"Exhibit No. 47," Flat Top Tie-Plate Showing Rail-Wear.

Mr. Brown: The illustration referred to by the witness is offered in evidence and marked "Complainant's Exhibit No. 47, Flat Top Tie-Plate Showing Rail-Wear."

Mr. Cooke: Objections repeated to the offer.

I also have an illustration of a Wolhaupter corrugated top plate and a flat top tie-plate which is another illustration showing a comparison of the excessive wear of the flat top plate against prac-
187 tically no wear of the Wolhaupter corrugated top plate both plates being in service the same length of time under the same track conditions. I would state that the handwriting shown on this picture, to the best of my knowledge, is that of Mr. Benjamin Wolhaupter, and states "Note: This plate is 'worn through,'" and shows two arrows directed to the plate to the points where it is noted.



"Exhibit No. 48." Showing Rail-Wear on Flat Top Tie-Plate.

Mr. Brown: The illustration referred to by the witness is offered in evidence and marked "Complainant's Exhibit No. 48, Showing Rail Wear on Flat Top Tie-Plate."

Mr. Cooke: Objections repeated to the offer.

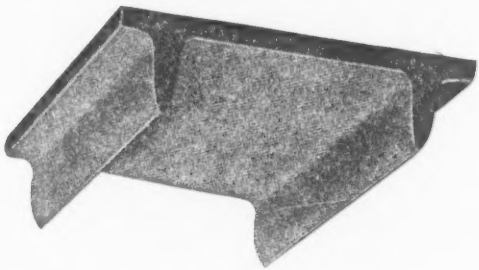
Another and later development of the tops of tie-plates was an addition of a rail sustaining shoulder to the top of the Wolhaupter type of corrugated top tie-plate. This was added to prevent throat cutting of spikes and to assist them in holding track to gage. I have an illustration which shows the Wolhaupter type of corrugated top tie-plate with a shoulder, which shows clearly the corrugations together with the rail sustaining shoulder.

188 Mr. Brown: The illustration referred to is offered in evidence and marked "Complainant's Exhibit No. 49, Wolhaupter Corrugated Top Tie-Plate with Rail Sustaining Shoulder."

Mr. Cooke: Objections repeated and as already having been offered in the case.

Now in reference to the bottoms of tie-plates or that portion of the plate which rests on or upon the top of the tie. As I have previously stated the first form of plate was the flat bottom type of plate as shown in "Exhibit No. 41."

The second form of bottom of a tie-plate which came on the market commercially is what is commonly known as the longitudinally flanged bottom. The illustration which I have shows the first form of this plate that was manufactured. These longitudinal flanges were designed to penetrate the fibres of the wood of the railroad tie so that the plate would be held into the tie and would assist the spikes to resist the downward and outward thrust of the rail as previously explained.



"Exhibit No. 50," Tie-Plate with Longitudinal Bottom Flanges.

Mr. Brown: The illustration referred to by the witness is introduced in evidence as "Complainant's Exhibit No. 50, Tie-Plate with Longitudinal Bottom Flanges."

Mr. Cooke: Objected to as immaterial.

(Here follows diagram marked pages 189 and 190.)

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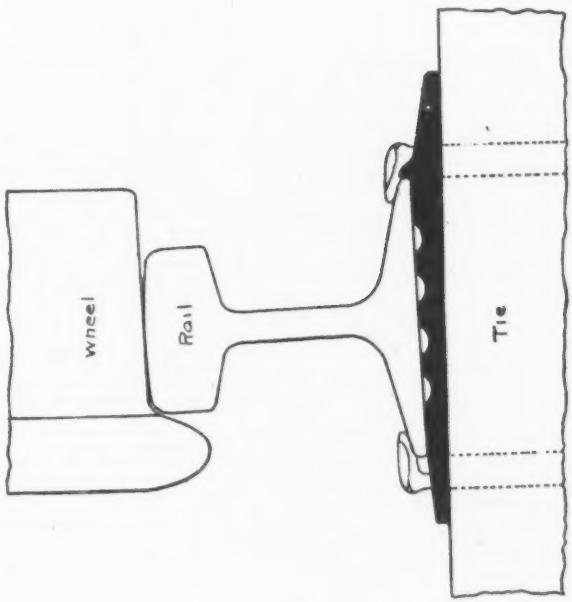
"Complainant's Exhibit No. 49, Wolhaupter Corrugated Top Tie-Plate with Rail Sustaining Shoulder".

June 18th, 1909.

E. B. Wilkins
Notary Public.



"Exhibit No. 51," Wolhaupter Longitudinal Bottom Flange Tie-Plate.

191 It is of record that this plate, as shown in "Exhibit No. 50," was further developed and several different designs of this particular form of bottom were brought out and one of the developments of this form of plate is shown in the illustration "Exhibit No. 26." I would describe this latter development as having four tie penetrating devices or flanges and would state that this plate was made with two, three and four of these tie penetrating devices as might be necessary to meet certain conditions.

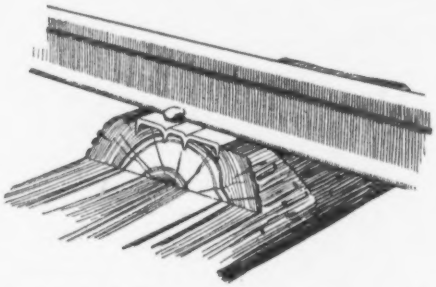
The next longitudinal flange bottom tie-plate was of the Wolhaupter type. The illustration which I have shows one of the original designs of this form of plate, this particular illustration showing the plate embedded in the tie up to its bottom surface and a portion of the tie having been cut away so that the bottom of the plate which feature I am now describing can be readily seen.

(Here follows drawing marked page 192.)

193 Mr. Brown: The illustration referred to by the witness is offered in evidence as "Complainant's Exhibit No. 51, Wolhaupter Longitudinal Bottom Flange Tie-Plate."

A further modification of this plate is shown in "Exhibit No. 24." This plate was also made with three, four and five tie penetrating flanges.

To further describe the bottoms of tie-plates the plate was what is shown as the Q. & W. type of Walhaupter plate as shown on illustration which I have and has been shown in "Exhibit No. 25." This plate is shown in a tie with the plate embedded to its bottom surface with a railroad rail spiked in position on top of the plate and a portion of the tie cut away to show more clearly the position of the plate and its cross-section when embedded in the tie.

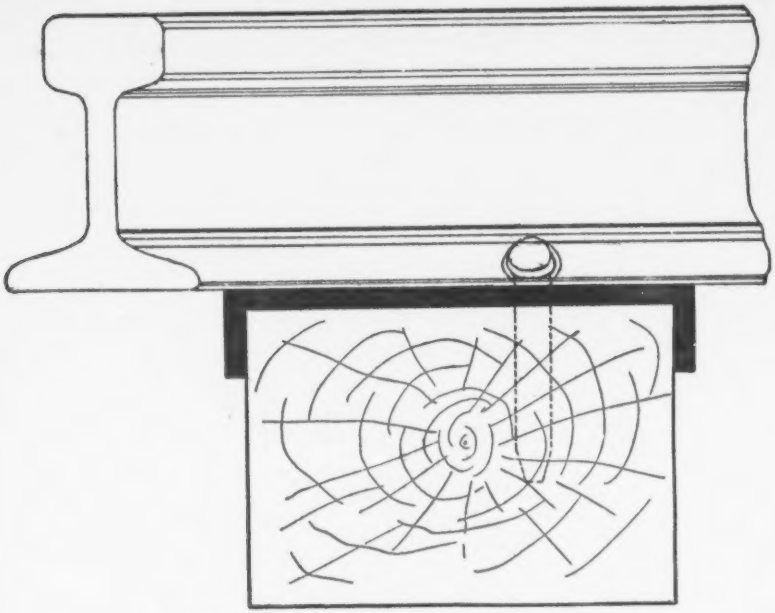


"Exhibit No. 52," Q. & W. Longitudinal Bottom Rib Tie-Plate.

Mr. Brown: The illustration referred to by the witness is introduced in evidence as "Complainant's Exhibit No. 52, Q. & W. Longitudinal Bottom Rib Tie-Plate."

Mr. Cooke: Last objections repeated.

194 Among other designs of the bottoms of tie-plates there was used what is known as the channel bottom plate. The bottom of this plate is illustrated in the picture which I have in my hand which shows that the outside edges of the plate were rolled or turned down so that they would embrace the outside edges of a railroad tie. This plate was abandoned on account of its excess weight and unnecessary material.

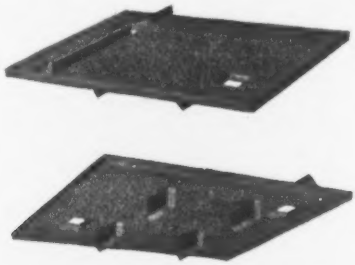


"Exhibit No. 53," Channel Bottom Tie-Plate.

Mr. Brown: The illustration referred to by the witness is introduced in evidence as "Complainant's Exhibit No. 53, Channel Bottom Tie-Plate."

Mr. Cooke: Last objections repeated.

The next development in the design of the bottoms of the tie-plates was what is commonly called the claw bottom plate which is illustrated in the picture which I have in my hand. These
195 plates were usually constructed with four or more sharpened claws designed to be driven into the tie and their evident purpose is to prevent rail spreading. This design of bottom has not proven altogether satisfactory and to the best of my knowledge the use of these plates have been restricted to a great extent to hardwood ties. This particular illustration shows both the top and bottom of the plate.



"Exhibit No. 54," Claw Bottom Tie-Plate.

Mr. Brown: The illustration referred to by the witness is introduced in evidence as "Complainant's Exhibit No. 54, Claw Bottom Tie-Plate."

Mr. Cooke: Last objections repeated.

The next development was the cross-ribs on the bottom of the plate as shown in illustration which I have. These cross-ribs run the full width of the tie-plate. Their purpose was to assist the spikes in resisting the downward and outward thrust of the rail as previously explained.

196 Mr. Brown: The illustration referred to by the witness is introduced in evidence as "Complainant's Exhibit No. 55, Cross-Ribbed Bottom Tie-Plate."

Mr. Cooke: Last objections repeated.

Recess.

I have explained the different types of the tops of the tie-plates and also the different types of bottoms of tie-plates and wish to state now that these in a general way cover the designs that I know of although there have been possibly slight modifications in the tops such as different shaped corrugations and there have also been modifications in the bottoms but in a general way I believe my explanation of the tops and bottoms of plates covers the essential features that I wish and desire to call attention to.

After this explanation and after having described both the tops or rail bearing surface of the tie-plates and the bottoms or tie engaging surface of the tie-plates I will combine these two features into complete plates, starting from the original flat top and flat bottom tie-plate and show their general development which, as previously stated, was evidently along two distinct lines. This development is clearly shown in the illustration which I have before me and as previously stated takes into consideration the general types of plates.

(Here follows diagrams marked pages 197 to 199.)

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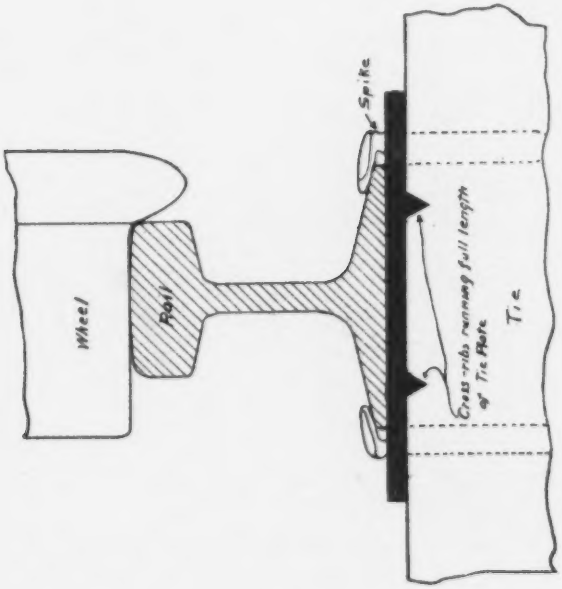
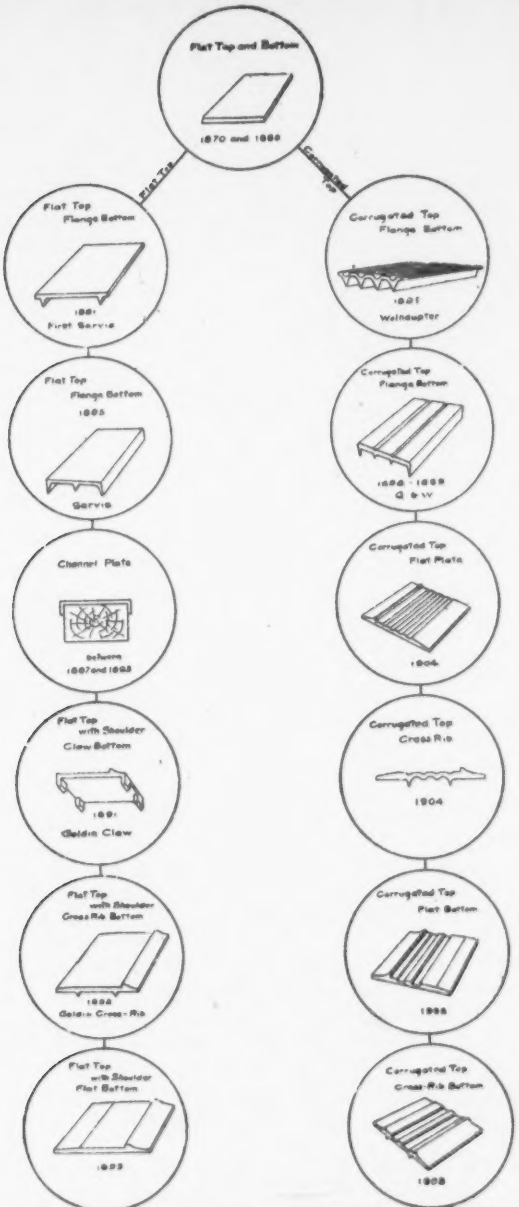
June 18th, 1909.

C. B. Wilkens
Notary Public.





"Exhibit No. 56," Illustration Showing Tie-Plate Development.

200 We will start from the flat top and flat bottom plate which, as I have stated, to the best of my knowledge was first used in 1870 and was experimented with by the Pennsylvania Railroad. I also know that this plate was experimented with on other roads, for instance, on the Manhattan Elevated Railroad in New York, I think in 1880 or 1888. It was a fact that these plates were not successful as used. As explained there were two divisions in the development of the business, that is, the flat top type and we branch off from the original flat top, flat bottom plate to the Servis (this particular illustration shows a series of circles in which each tie-plate that I refer to is illustrated) in its original form of two under longitudinal flanges which was made shortly after 1881.

In 1885 this flat top form of plate was further developed by having three under longitudinal flanges, two of them being on the outside edges of the plate and one of them being on the center of the plate. This plate was, as I have previously testified, modified from time to time but its use has gradually died out as I think has been shown in my testimony in connection with the numbers of plates of each distinctive type which have been sold by the complainant company. Sometimes between the year 1887 and 1893, I am not able to state the exact date, the channel form of plate was used. This plate had the flat top or rail bearing surface of the Servis plate together with a channel at its outside edges which embraced the outside edges of the tie.

The next plate was what is commonly called the Goldie claw plate which was introduced I think in the year 1891. This plate had the flat top rail bearing surface together with a rail sustaining shoulder. On the bottom of the plate were claws; these claws originally were placed on the outside edges of the plate and they were ap-
201 proximately an inch long and about seven-eighths to an inch wide, sharpened on their lower edges to penetrate the tie.

The next plate or development was what was commonly called the Goldie cross-rib plate which had a cross-rib running entirely across the bottom of the plate. This plate had a rail sustaining shoulder on its top and was practically a flat upper surface. While I state that this plate had a flat upper surface there was a slightly concaved surface on the top of the plate directly below the center of the head of the rail or below the web of the rail. That portion of the plate directly under the portion described was correspondingly convexed. The plate had, therefore, the same thickness of metal at the point where it was concave or convex as at the point where it was not concave or convex. As a matter of fact I have seen actually rolled samples of this plate showing that the concavity is so slight that it is barely discerned.

I understand that the purpose of this concavity and convexity was to form a cushion on which the rail would work and to compress the fibres of the wood of the tie directly under the convex portion at the bottom of the plate so that it would have a firmer base than that portion of the plate which was not convex or concave and would, therefore, relieve the outside edges of the plate, that is, the edges of the plate from the flanges of the rail to the outside of the

plate longitudinally from excessive strain and thereby prevent buckling. This plate was introduced in 1892 but I cannot learn that it was used extensively. This plate had cross-ribs running across the bottom of the plate and a rail sustaining shoulder on its upper surface.

The next general type of tie-plate is also shown on the diagram, and this plate had a perfectly flat bottom and a flat top with a rail sustaining shoulder, and we have record of its having been
202 used in considerable quantities in the year 1893.

I now come to the other branch of the tie-plate design which I will specify as the corrugated type of plate. This was first manufactured and sold by The Railroad Supply Company in the year 1895 under patent already referred to and is known as the Wolhaupter type of corrugated top tie-plate with flange bottom. As I have shown in previous testimony this plate was introduced in 1895 and after two years of introduction it sprang into immediate popularity with the different railroad systems and this fact is corroborated by the large sales of this form of plate and the fact that it has been used by the leading railroad companies in the United States in preference to the flat top form of plate.

The next type of tie-plate was the corrugated top Q. & W. plate of the Wolhaupter pattern. This plate was brought out in the years 1898 and 1899. Considerable number of these were sold as the value of the corrugations on the top of the tie-plate were appreciated by the railroad engineers.

The next plate as shown in the diagram under the heading corrugated top type of tie-plates was brought out in the year 1904. This plate as I previously testified was made for the Atchison, Topeka and Santa Fe Railroad. It had corrugations on its upper surface to carry away grit, sand and foreign material that might be sucked between the rail and the top of the plate and it also had the rail sustaining shoulder with a flat bottom.

The next form of plate as shown under the division of corrugated top tie-plates shows a plate with corrugations on its top with a rail sustaining shoulder and corrugations on its bottom between the cross-ribs, the cross-ribs running the width of the plate. I
203 have previously testified that to the best of my knowledge this was a sample plate made in 1904 and is shown here to illustrate this design and construction.

The next plate was another development of the corrugated top flat bottom having a rail sustaining shoulder on its upper surface. This plate was brought out the latter part of 1904 or the early part of 1905. This illustration also shows a corrugated top cross-rib bottom tie-plate which was first made by The Railroad Supply Company in 1908. It will be noted that this plate is of the Wolhaupter corrugated top type of plate having a rail sustaining shoulder and ribs on its bottom to penetrate or engage the tie. This plate is the one that has been manufactured by the defendants in this suit and I am advised by counsel is an infringement on our Wolhaupter patents.

I have shown the development of the tie-plate in a general way,

I mean by that the general types under consideration from my earliest knowledge of their use, to show that the effort of the inventors was to correct the defects in track. It became quite apparent some years past that it was necessary to use some device which would increase the life of ties. The hardwood tie was originally used very extensively in track construction, its life was not particularly long and except under some severe conditions it would rot out before it would be destroyed by the mechanical action of the rail.

As oak ties or ha-dwood ties became scarce and consequently expensive it became necessary to look for some other class of wood to supply the enormous demands for ties to maintain the large mileage in the United States and also for new construction. This led to the natural result of looking for other and cheaper ties and we have, as a result, the railroads using almost all classes of the softer
204 wood. When the use of the softer woods was started it soon became evident that a tie-plate was a necessity. It was then necessary to make a tie-plate which would fill all the requirements and correct the difficulties as explained in my previous testimony, namely, to prevent the tie from wearing under the mechanical action of the rail, to prevent track spreading and to prevent the throat cutting of spikes and otherwise to assist to keep the rails in their proper position and to preserve the life of the ties against wear. The illustration which I have referred to shows how this device was developed to meet this requirement and its success in accomplishing this result is best answered by the large numbers of the Wolhaupter type of corrugated tie-plate which have been sold by this company in comparison with the small number of flat top plates.

Mr. Brown: The illustration referred to by the witness is offered in evidence and marked "Complainant's Exhibit No. 56, Illustration showing Tie-Plate Development."

Mr. Cooke: Same objections.

Q. 48. Please state where you obtained the various illustrations that you have referred to and which have been introduced in evidence during the course of your deposition?

A. I obtained them from the records of The Railroad Supply Company and some of them I caused to be made under my supervision. We make a practice of verifying details by inspectors and official data and collecting data and information relative to our business. I have already referred to our museum of plates and a number of these illustrations were made directly from them.

Q. 49. Aside from the advantages to which you have referred, please state any other or further advantages that are attained by the use of tie-plates of the Wolhaupter corrugated top type,
205 such, for example, as that shown in "Complainant's Exhibit No. 15" over the use of tie-plates of the flat top type?

Mr. Cooke: Objected to as having been already answered.

A. There are two principal and distinct advantages in the Wolhaupter type of corrugated top plate, one of them I think I have covered in my testimony and that is the fact that the life of the plate

is longer for a given amount of metal where the top is corrugated for the reason that it will not grind out as rapidly by the mechanical motion of the rail as will a flat top. The other distinct advantage of the Wolhaupter type of corrugated top plate and which I do not remember as having explained fully is the fact that it is lighter, that is, the metal is removed from the plate without materially reducing its strength as a tie-plate. In other words, the metal is removed where it is not needed.

This is a great saving in money to railroad companies. For instance, I would refer to the Wolhaupter type of corrugated top plate as to what is commonly known as the Harriman plate as an example. This plate we will say is eight inches wide by eight and one-half inches long, will weigh approximately six and forty-four hundred (6.44) pounds each as it is now designed. If we should take the same plate without the corrugations it would weigh approximately about thirteen per cent more. Roughly speaking this would make the perfectly flat top plate of the same dimensions as the corrugated top plate above referred to weigh about seven and a quarter (7.25) pounds each.

We will suppose that a railroad system should purchase two million of these plates, which is not an unusual amount for a large railroad system to use during a period of one year. Two million of
206 these plates of the corrugated top type against two million of the same pattern and design with a flat top would represent a saving in metal of the corrugated top Wolhaupter type over the flat top of approximately eight hundred and fifty or sixty tons. We will say for instance that these plates are bought by the railroad company at $40 a ton, this would make a saving to the railroad company in one year's purchase of over $34,000.

This is certainly a great advantage in economy in the use of the Wolhaupter type of plate over the flat top form of plate not only in its first cost but from the fact that as the corrugations carry away the sand and grit the life of the plate is lengthened, and the plate has therefore a maximum life with a minimum amount of metal.

Q. 50. Does the presence of the corrugations in the top of a plate weaken the plate and if not, why not?

Mr. Cooke: Objected to as leading.

A. The presence of the corrugations in the top of the plate does not weaken the plate insofar as it is used as a tie-plate for the reason, as I have previously testified the greatest strain is a downward and outward thrust of the rail which in all types of the Wolhaupter type of corrugated top plate is directed towards and sustained by the plate at the point where the metal in the rail bearing surface of the plate is the thickest.

Direct examination of the witness Bell closed.

Cross-examination by Mr. Cooke without waiving objections:

X Q. 51. How long have you been connected with the tie-plate business?

A. I have been connected with The Railroad Supply Company in its tie-plate business since December, 1898.

207 X Q. 52. Then your knowledge of tie-plates of different constructions and their uses has only been acquired since that time?

A. I had knowledge of tie-plates previous to that time.

X Q. 53. Was this knowledge that you had previous to 1898 only such as the ordinary person has in regard to tie-plates?

A. I cannot say that it was.

X Q. 54. Were you connected with any business prior to 1898 that would enable you to understand different constructions of tie-plates and their uses?

A. I was connected with a business where tie-plates were under consideration.

X Q. 55. What business was that?

A. The railroad business.

X Q. 56. In what line?

A. I was employed in the office of the general manager of what was then known as the Philadelphia and Reading Railroad at Buffalo.

X Q. 57. How long was your employment in this connection?

A. Approximately three years.

X Q. 58. And through what period of time was that?

A. It was just prior to 1893 that — left, or during the year 1893.

X Q. 59. Then you were with the Reading Railroad from about 1889 or 1890 to 1893, is that correct?

A. Yes, approximately, I do not remember the exact dates.

X Q. 60. What were your duties in such position?

A. Stenographer and assistant to the chief clerk and also to the general manager.

X Q. 61. Then in your testimony and in particular your answer to Q. 47 wherein you have attempted to give the forms of tie-

208 plates as first used down to the present time regarding different tie-plates has been such as you have obtained from hearsay or from notes and other data compiled by others, is that a fact?

A. I think I testified that my work required me to make inspection trips over railroads at which times information was obtained and data obtained concerning the use of tie-plates by me personally.

X Q. 62. Question repeated?

A. Certain information that I have testified to has been obtained from data and literature published by others, other information has been obtained by actual observation on my part.

X Q. 63. And this actual observation has practically been since your connection with The Railroad Supply Company in 1898?

A. Why I believe that I have observed plates previously to this time.

X Q. 64. You have never had any practical experience in track laying or any construction of track laying?

A. No, I have never had any experience.

X Q. 65. And your connection with The Railroad Supply Com-

pany has chiefly been in connection with the selling of tie-plates and other articles in their line of business?

A. I have testified that my connection with The Railroad Supply Company has been in connection among other things with the selling of tie-plates, the manufacturing of tie-plates and with the promotion of this device which has necessitated my being entirely familiar with their constructions and the functions they must perform.

And thereupon an adjournment was taken to Saturday, June 19, 1909, at 10 o'clock in the forenoon.

G. R. WILKINS,
Notary Public.

209 CHICAGO, ILLINOIS, June 19, 1909.

Met pursuant to adjournment.

Present: Counsel as before.

Cross-examination of the witness Bell resumed by Mr. Cooke:

X Q. 66. About how many tie-plates have you made with the corrugations on the top running parallel with the rail?

A. I could not state definitely off-hand. I think in the neighborhood of 60,000,000.

X Q. 67. You have stated that about 77 per cent of the tie-plates which your company has manufactured were those of the corrugated top type. What per cent of these tie-plates were used with the corrugations running parallel with the rail?

A. I cannot state definitely from memory but it was less than 50 per cent.

X Q. 68. When did you first start to make for the market the corrugated type of plate in which the corrugations ran parallel with the rail?

A. I think some time during the year 1904 these plates were first made.

X Q. 69. And before that time all the corrugations in the plates which you manufactured ran across the rail?

A. Yes, they ran across the rail or longitudinal with the length of the plate.

X Q. 70. And were therefore longitudinal with the tie?

A. Yes, they were longitudinal with the length of the tie.

X Q. 71. In giving the time of 1904 in which you first started to market the tie-plates in which the corrugations of the plate ran parallel with the rail, did you refer to "Exhibit No. 18,"
210 which is the cast aluminum plate you have referred to, as the one you made at that time?

A. I have already testified that to the best of my knowledge the plate shown in "Exhibit No. 18" was made in the year 1904 and during that year there was also manufactured and sold other plates having corrugations running parallel with the rail.

X Q. 72. But you only made one plate in 1904 like "Exhibit No. 18," is that a fact? (Sup., p. 110.)

A. I do not know exactly how many were made. There may have been one or two, possibly more.

X Q. 73. But you didn't market that plate did you?

A. No, I have no knowledge of this plate having been sold at that time.

X Q. 74. Now, you say that some other plates were marketed in the year 1904 in which the corrugated top ran parallel with the rail, what plates were these and who were they for?

A. These plates were the Wolhaupter type of corrugated top plates and were made for the Atchison, Topeka & Santa Fe.

X Q. 75. Have you introduced in evidence a cut or illustration of this plate which you say was sold to the Santa Fe in 1904?

A. Yes. This plate is shown in "Exhibit No. 13." (See p. 30.)

X Q. 76. And this was the first plate that you marketed in which the corrugations ran parallel with the rail?

A. To the best of my knowledge this was the first plate that was marketed with the corrugations running parallel with the rail?

X Q. 77. How many of these plates did you furnish the Santa Fe?

A. Approximately five or six million, I don't remember the exact number.

211 X Q. 78. And prior to that time the plates which you manufactered the top corrugations extended across the rail?

A. Prior to the year 1904 they did, to the best of my knowledge.

X Q. 79. Who suggested this change of having the corrugation of the plate extend parallel with the rail instead of crosswise of the same?

Mr. Brown: Question is objected to as incompetent, as being outside of the direct-examination; further because it does not appear that the witness knows who made the change or who suggested the change, and also as irrelevant and immaterial.

Mr. Cooke: Objections are made to the instructions of the witness.

A. I do not know who suggested this change.

X Q. 80. How did it come about?

Mr. Brown: Same objections.

A. As I do not know who suggested it I do not know how it came about.

X Q. 81. Then you mean to say that with the great attention which you gave to complainant's business as to tie-plates, as you have testified to both in your direct and cross-examination, you do not know how this change from the corrugations across the rail to those parallel with the rail came about?

A. You asked me who suggested the change and I testified that I did not know who suggested the change, which is true, and I cannot see wherein this affects the attention given by me to complainant's business. The suggested change may have been made by one man whom I have in mind or may have been made by another, but I do not know who actually made the change.

X Q. 82. And do you mean to say that you do not know
212 why this plate was changed from the corrugations running across the rail to those running parallel with the rail?

Mr. Brown: Same objections.

A. No, I know of some reasons for the changing of the corrugations.

X Q. 83. Please state them?

A. The plate as shown in "Exhibit No. 13" having corrugations running parallel with the rail would have been a very difficult rolling proposition if the corrugations were run in the opposite direction. It is also the opinion of some that corrugations which are directly under the base or flange of the rail perform their functions better. This is a matter of opinion.

X Q. 84. And that difficult rolling proposition was caused by the upper face of the plate, "Exhibit No. 13," being on a bevel, was it not?

A. Yes, sir.

X Q. 85. Then the corrugated top plates in which the corrugations extend across the rail and manufactured by you prior to 1904 were unsatisfactory, were they?

A. Unsatisfactory to whom?

X Q. 86. To the users.

A. This is a matter of opinion on which some of the best engineering authorities in the United States differ. The corrugated plates having the corrugations running the longitudinal length of the plate and across the rail are still used in very large quantities by some of the large trunk lines, other large systems with equally prominent engineers prefer the plates with the corrugations running parallel with the rail.

X Q. 87. But you have sold more of the corrugated top plate in which the corrugations run parallel with the rail than those which run crosswise, have you not?

213 A. If I remember correctly I have testified that less than 50 per cent of the total number of corrugated plates sold were of the type with the corrugations running parallel with the rail. I may not remember the exact figures of the sales of these two types, but my general recollection is that there has been more of the plates sold with corrugations running across the rail than with the corrugations running parallel *of* the rail.

X Q. 88. In your answer to X Q. 81 you say that the suggested change in the corrugated top plate from cross corrugations to parallel corrugations with the rail may have been made by one man whom you have in mind or may have been made by another. Who did you have in mind as to making this change?

Mr. Brown: Last objections repeated.

A. I have in mind Mr. Benjamin Wolhaupter, or possibly by Mr. Faulkner of the Santa Fe, as I understand that he and some other officials of the Santa Fe were in consultation with each other at about the time this change was made. I do not know that Mr.

Faulkner made the suggestion but I think Mr. Wolhaupter made the suggestion.

X Q. 89. Why do you think Mr. Wolhaupter made the suggestion?

Mr. Brown: Same objections.

A. It would be natural for him to do so, as I understand that these corrugations are covered by patents issued to him and as I understand and have previously stated that he was negotiating with the Santa Fe in reference to the change in design of their plates at about that time.

X Q. 90. Were you present at any of these meetings?

Mr. Brown: Objected to as immaterial and irrelevant.

214 A. I do not recall that I ever was present at any meeting with Mr. Faulkner and Mr. Wolhaupter together at this time.

X Q. 91. Then why do you think that Mr. Wolhaupter suggested this change?

Mr. Brown: Same objection.

A. Because I understand he was negotiating with the Santa Fe at that time and it was therefore possible for him to make the suggested change.

X Q. 92. Prior to 1904 you had made tie-plates for several years for the Santa Fe in which the corrugated top ran across the rail, did you not?

A. Yes, sir.

X Q. 93. And did you personally consider this change from the corrugations running across the rail to those running parallel with the rail an important one?

A. The corrugations running across the rail and the corrugations running parallel with the rail perform the same function. It is a matter of opinion which is the best and whether or not it was an important change or not.

X Q. 94. Question repeated?

A. It was an important change in my personal opinion at that time.

X Q. 95. For what reason?

A. It facilitated the manufacturing process inasmuch as the Santa Fe desired a plate that was canted or beveled.

X Q. 96. And without this beveled top would you consider it an important change?

A. Not particularly, the grooves performed practically the same function. It might possibly have been possible to take out a little more metal and consequently make the plate a little lighter.

215 X Q. 97. Then in your opinion this change only made the plate a better rolling proposition and lighter?

A. So far as the grooves were concerned, yes.

X Q. 98. In Exhibits Nos. "24," "25" and "26" the grooves on the top surface and ribs on the bottom face extended across the rail and not parallel therewith as in the defendants' plate, is this a fact?

A. Yes, sir.

X Q. 99. In your answer to Q. 23 would not a better classification of plates be those that have their top grooves and under ribs running parallel with the rail and those in which these parts ran across the rail?

A. I do not think so for the grooves are used whether they run parallel with the rail or across the rail, perform the same function, and are all made by the complainant company under the Wolhaupter patents, therefore I have classed them as Wolhaupter corrugated tops.

Mr. Reed: Motion to strike out the latter portion of the answer as to being under the Wolhaupter patents and as irresponsive.

X Q. 100. You never rolled a plate like "Exhibit No. 18," did you?

A. We have rolled a plate of the general design as "Exhibit No. 18," that is, with corrugations on its top and cross-ribs on its bottom, without the corrugations on the bottom of the plate.

X Q. 101. Question repeated.

A. Not exactly like it but of the general type.

X Q. 102. You mean that it did not have the corrugations on the bottom, do you?

A. Yes, I mean that it did not have the corrugations on the bottom and the dimensions might have differed, but the type was the same.

216 X Q. 103. In your "Exhibit No. 56" you have marked the last illustration on the right-hand side "1908." It is a fact is it not that Mr. Hawley has testified that you did not actually market this plate or roll the same until January, 1909?

A. If I recall correctly Mr. Hawley testified that this plate in the bottom circle on the right-hand side of "Exhibit 56" was first made in May or June, 1908, and was first rolled January 1st, 1909.

X Q. 104. And you only made two plates of this character for samples or testing purposes prior to January, 1909, or in May or June of 1908, as you have said?

A. When you refer to plates of this character you mean plates similar to "Exhibit No. 15."

X Q. 105. Yes.

A. Two plates similar to "Complainant's Exhibit No. 15," that is, practically the same in configuration. I think the only difference being that it was slightly shorter and the shoulder was afterwards reduced in height, were all that we made in the year 1908.

X Q. 106. There are many other types of plates on the market and in use other than those you have described in your testimony and shown in your "Exhibit No. 56," are there not?

A. Yes, there are variations from the general types shown.

X Q. 107. You say that the plate shown in "Exhibit No. 27" is of the New York Central standard. This road uses other designs of plates, does it not?

A. When you refer to the New York Central do you refer to the New York Central and Hudson River Railroad Company proper, or the New York Central Lines as it is commonly called?

X Q. 108. I don't know, I am seeking information. I refer to the same one you did in your answer.

217 A. I asked this question for the reason that I understand there are several individual roads that make up this system. The New York Central and Hudson River Railroad Company, as far as I know, is the parent company. This road as I understand uses the particular form of tie-plate as shown in "Exhibit No. 27" as its standard.

(See p. 112.)

X Q. 109. You mean to say on its own lines it is used as a standard?

A. To the best of my knowledge it is used as a standard on the New York Central and Hudson River Railroad *Company* proper.

And thereupon an adjournment was taken to Wednesday, June 23, 1909, at 10 o'clock in the forenoon.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, June 23, 1909.

Met pursuant to adjournment.

Present: Counsel as before.

And thereupon at the request of counsel for defendant the further cross-examination of the witness Edwin H. Bell is suspended for the purpose of allowing complainant to proceed with the examination of witnesses in the East, said witness Bell to be produced for further cross-examination at such time hereafter as may be agreed upon to suit the convenience of Mr. Reed and Mr. Brown.

And thereupon an adjournment was taken to Manhattan Beach Hotel, Manhattan, Long Island, Wednesday, June 30, 1909, at 2 o'clock p. m., it being agreed by and between counsel that the proceedings may continue before G. R. Wilkins, notary public for Cook county, Illinois, at said Manhattan, Long Island, acting by consent as Special Examiner with the same force and effect

218 as though the said G. R. Wilkins had been duly appointed by the court as Special Examiner in this cause.

G. R. WILKINS,
Notary Public.

NOTE.—In preparing this record, the cross-examination of the witness, Bell, on July 14, 1909, is printed at this point, that the continuity of the deposition may not be interrupted.

POOLE & BROWN.

CHICAGO, ILLINOIS, July 14, 1909.

Met pursuant to agreement of counsel.
Present: Counsel as before.

And thereupon the further cross-examination of the witness, EDWIN H. BELL, is resumed by Mr. Reed.

X Q. 110. You were connected with the Railroad Supply Com*ap*ny before it began to manufacture what you have styled the Wolhaupter tie-plate, were you not?

A. The Wolhaupter tie-plate was first made in 1895 and I became connected with the Railroad Supply Company in the latter part of 1898.

X Q. 111. Then the Railroad Supply Company was engaged in manufacturing the Wolhaupter tie-plate when you became associated with it?

A. Yes, sir.

X Q. 112. Describe or indicate to us the form of plate styled "Wolhaupter" which the Railroad Supply Company was asking when you first became connected with that company.

A. It was of the general type as shown in "Exhibit 21," page 3.

X Q. 113. That is, it had a corrugated or grooved top, lower flanges engaging with the tie, no shoulder on the top and the
219 lower projections engaged in the tie parallel to its grain and the rail was crosswise of the corrugations?

A. Yes, this is true. However, there was, if I remember correctly, some few plates made with a pressed up shoulder where it was desired.

X Q. 114. Was that shoulder parallel to the top grooves or at right angles.

A. It was at right angles to the grooves.

X Q. 115. And the lower flanges engaged in the tie parallel to the grain in the plates both with and without the shoulder?

A. Yes, the flanges entered the tie with the grain of the wood or parallel with the grain of the wood.

X Q. 116. In the Wolhaupter type that was manufactured in 1898 by the Railroad Supply Company were the under flanges underneath the grooves or projections on the top; by projections, I mean the raised portions of the top?

A. The flanges were under the grooves.

X Q. 117. Was that position of the under flanges deliberate and what was the reason for it, if any?

A. I understand that that was the way the plate was originally designed or was designed and the logical reason for the flanges being in that position are that they would strengthen the grooves.

X Q. 118. The reason, then, for placing the lower projections underneath the grooves was additional strength supposed to be given to the tie-plate by placing those projections in that position?

A. Yes, and I think there were other reasons, as where the flanges are placed under the grooves the spike holes are punched

through the thickest portion of the body of the plate and give the spike greater backing.

220 X Q. 119. Were there any other reasons that these two for placing the lower flanges underneath the grooves?

A. There might have been, I can not think of any right now.

X Q. 120. Prior to your connection with the Railroad Supply Company had you seen or investigated the Wolhaupter tie-plate either as to manufacture or use?

A. No, sir.

X Q. 121. What other forms of tie-plate than the ones you have indicated as the Wolhaupter type was the Railroad Supply Company making in 1898 when you became connected with it?

A. They were promoting the Q & W plate shown in "Exhibit 21," page 7, the Servis plate shown on page 9.

X Q. 122. What do you mean by promoting?

A. I mean they were selling.

X Q. 123. Of which were they selling the larger quantities, the Wolhaupter, Q & W, or Servis?

A. I do not recall, my impression is the Wolhaupter.

X Q. 124. The Q & W plate had a corrugated top with lower projecting flanges underneath the depressions or grooves of the upper surface, did it not?

A. The Q & W plate has two corrugations on its upper surface directly over the two inside flanges or projections.

X Q. 125. And in the Q & W plate the lower flanges engage in the tie parallel to the grain and the rail crosses the top corrugations at right angles.

A. Yes, they do.

X Q. 126. The Servis plate has a flat top, lower flanges engaging in the tie parallel to the grain, and the rail crossing at right angles to these flanges?

A. Yes.

X Q. 127. Had you known or seen either the Servis or Q & W plates on the market prior to 1898?

221 A. I do not recall that I had seen the Servis plate prior to 1898, although I know from the records that it was on the market prior to that time. To the best of my knowledge, the Q & W plate was designed in that year.

X Q. 128. Which preceded, the Servis or the Wolhaupter plate?

A. I understand that the Servis plate was on the market first.

X Q. 129. How long did the Railroad Supply Company continue to manufacture without change, except occasional punched up shoulders, the Wolhaupter plate shown in "Exhibit 21," page 3?

A. The type of Wolhaupter plate shown in "Exhibit 21," page 3, to the best of my knowledge, was made first in 1895 and is still being made. There have been modifications of the plate made since its original manufacture but the general type is the same.

X Q. 130. When was it that the Railroad Supply Company first made or marketed a tie-plate with a pressed up shoulder such as you refer to in your answer X Q. 113?

A. I do not know exactly, it was in the early stages of the business.

X Q. 131. You found the company making tie-plates with top grooves, lower projecting flanges and pressed up shoulders at the time you became connected with it?

A. I think they were prepared to do this when called upon.

X Q. 132. And did they do it in 1898 or about that time?

A. I do not recall whether they did or not in 1898.

X Q. 133. Well, fix the time as near as you can when to your knowledge, the Railroad Supply Company made or sold a tie-plate of this description, that is, with a corrugated top, lower
222 parallel projecting flanges and a pressed up shoulder on the top?

A. To the best of my knowledge, it was some time prior to 1898.

X Q. 134. At any rate, when you became connected with the company you found by their designs and models that they were prepared to manufacture tie-plates of this kind?

A. They had advertised a plate of this kind and, I understand, were under contract with certain mills to make it.

X Q. 135. And they did make it for those roads about that time, I mean about 1898?

A. To the best of my knowledge, some time prior to 1898.

X Q. 136. With what mills were these contracts?

A. I think the contract was either with the Springfield Iron and Steel Company or what was then known as the Tudor Iron Works, although I can not state positively about this.

X Q. 137. For what roads were they manufactured or supplied?

A. I do not recall and could not tell without looking the matter up what roads they were sold. I am under the impression, however, that there were some furnished to the C., B. & Q.

X Q. 138. Then prior to 1898 the Railroad Supply Company had contracted for the manufacture of and had supplied to one or more railroads tie-plates with corrugated top, lower projecting flanges parallel to the corrugations, pressed up top shoulder, the lower flanges engaging the tie parallel to the grain?

A. To the best of my knowledge, they had, as previously testified.

223 X Q. 139. And the railroads or railroad had received tie-plates of this description and put them in use?

A. I think there were some in use as testified to before.

X Q. 140. And the records and documents of the Railroad Supply Company showed plans, specifications and models for the manufacture of tie-plates of this description?

A. I do not recall having seen the plans or specifications in the records although I think I have seen a model of the plate.

X Q. 141. Is such model now in the possession of the Railroad Supply Company?

A. I could not say without making a search; it may be.

X Q. 142. Will you kindly inspect the records of the Railroad Supply Company, its documents, plans and specifications for tie-plates and the models and plates in its possession and produce such information as you can on this subject so as to definitely fix the dates, show the plans and specifications, the mills manufacturing

and the roads supplied with tie-plates of this description, and if not too much trouble the approximate number of such plates sold.

A. I will.

X Q 143. Would your museum of tie-plates show a specimen of this sort of plate?

A. It would if it were there, I do not know if it is in the museum or not.

X Q. 144. How long, or until what time rather, did the Railroad Supply Company continue to confine its manufacture to tie-plates of the Wolhaupter, Q & W and Servis styles as indicated in the various pages of "Exhibit 21" that you have designated, including the plate with the pressed-up shoulder?

224 A. The Railroad Supply Company are manufacturing them to date.

X Q. 145. I did not ask you that, I asked you how long it confined its manufacture to plates of this description?

A. I think until 1904.

X Q. 146. What form or modification did the Railroad Supply Company adopt in 1904?

A. The corrugated top shoulder tie-plate with the flat bottom.

X Q. 147. And to what date did the Railroad Supply Company continue the manufacture, exclusively, of the Wolhaupter, Q & W, Servis, Wolhaupter pressed-up shoulder plates as indicated in "Exhibit 21," and this additional corrugated top shoulder flat bottom tie-plate?

A. During 1904; I think I have testified that there was a corrugated top shoulder plate with cross-ribs made and this together with the other designs mentioned were made, I think up to 1906 or 1907.

X Q. 148. On this corrugated top parallel bottom flange pressed up shoulder tie-grain parallel plate were there one or two shoulders or sets of shoulders, I mean, was there a shoulder or set of shoulders for each side of the rail flange or only for one side?

A. In the model that I recall as having seen, I think, showed shoulders on one side of the rail flange.

X Q. 149. Was this last described form of tie-plate attempted to be patented or covered by letters-patent specially?

A. I do not know.

X Q. 150. You spoke a moment since of a tie-plate with a corrugated top shoulder and cross-ribs, please indicate what you mean by cross-ribs?

A. I mean a rib or ribs on the bottom of the plate running at right angle with the grain of the wood of the tie, or parallel with the rail sustaining shoulder on the top of the plate.

225 X Q. 151. In tie-plates of this last style were the top corrugations parallel to the rail or crosswise?

A. The corrugations were parallel with the rail.

X Q. 152. When was it, for the first time, that the Railroad Supply Company made a tie-plate with corrugated top shoulder and ribs or projections on the lower side in which the ribs and corrugations were crosswise of the tie and parallel with the rail?

A. A plate such as you describe was made, to the best of my

knowledge, under instructions to one of the mills of the Railroad Supply Company in the summer of 1904.

X Q. 153. What mill was that?

A. To the best of my knowledge, it was at Dilworth, Porter Company's mill at Pittsburg.

X Q. 154. Who suggested it this form?

Mr. Brown: Objected to as immaterial.

A. I don't know exactly, I am under the impression it was Mr. Wolhaupter.

X Q. 155. How many were made of this form, in a general way?

A. To the best of my knowledge, somewheres in the neighborhood of one hundred thousand plates.

X Q. 156. To what road were they supplied?

A. I understand they were sold to the Atchison, Topeka & Santa Fe Railroad.

X Q. 157. In what respect did they differ from the plate known as "Complainant's Exhibit No. 15" which I now show to you?

A. They differed from the plate as shown in "Complainant's Exhibit No. 15" in that they did not have cross-ribs on the bottom, the top or rail bearing surface of the plate was beveled or canted, that is, it was thicker at the point where the outside flange of the rail engage with the shoulder than they were at the point where the inside flange rested on the plate. The grooves were of a different contour,
226 they were, as I recall it, about half-round.

X Q. 158. Then these one hundred thousand plates which you have referred to as having been made in 1904 for the Atchison Road contained no ribs or projections at all on the lower surface?

A. To the best of my knowledge they did not.

X Q 159. They were flat bottom tie-plates?

A. I think I have testified that they were, yes, sir.

X Q. 160. I asked you in X Q. 152 when it was for the first time that the Railroad Supply Company made a tie-plate with corrugated top shoulder and ribs or projections on the lower side in which the ribs and corrugations were crosswise of the tie and parallel with the rail, and you answered that a plate such as I described was made, to the best of your knowledge, under instructions to one of the mills of the Railroad Supply Company in the summer of 1904, and then went on to specify that they were supplied to the Atchison Road, is that answer correct?

A. My answer to your X Q. 152 was not correct. I did not understand that you referred to the projections on the bottom of the plate. The plates that I referred to as having been made were flat bottom, the one hundred thousand plates I referred to were flat bottom.

X Q. 161. I will now ask you when for the first time the Railroad Supply Company made or had made a tie-plate with a shoulder for the rail flange, corrugated top, ribs, projections or flanges from the bottom engaging in the tie crosswise and both top corrugations and bottom ribs parallel to the rail?

A. The plate having a rail flange, corrugations on its upper surface parallel with the rail and cross-ribs or projections on its bottoms

running parallel with the shoulder on top or with the rail and also with corrugations on its bottom surface between the cross-ribs, to the best of my knowledge was made in 1904.

227 X Q. 162. In what quantity?

A. I do not know exactly, I think there were a few of them made.

X Q. 163. Where did you see them?

A. I have one in my possession.

X Q. 164. Question repeated.

A. Don't know exactly, I think about 1905.

X Q. 165. Where did you first see them?

A. In my office.

X Q. 166. Who brought them in?

A. It was handed to me by our president, Mr. Hawley.

X Q. 167. These plates had flanged shoulders, top surface corrugations parallel to the rail and projections from the lower surface parallel to the corrugations on the top and engaging in the tie crosswise of its grain, did they?

A. Yes, and in addition corrugations on their lower surface between the ribs.

X Q. 168. Were they supplied to any road in any quantity, if so, what road or roads?

A. I understand they were submitted to the Atchison, Topeka & Santa Fe Railroad.

X Q. 169. But as to that you do not know personally and of your own knowledge?

A. I was told by others that this was done.

X Q. 170. Do you or do you not know of your own knowledge whether or not such submission was made to the Santa Fe Road of this last mentioned form of plate?

A. I did not submit it myself, nor was I there when it was submitted but, as I have testified, I was told that it was submitted and therefore to the best of my knowledge it was submitted.

X Q. 171. But you have no personal knowledge that it was submitted except what you were told?

A. No, I have no personal knowledge only the word of other that it was submitted.

228 X Q. 172. Was that particular form of plate made or supplied to any road in any quantity?

A. To the best of my knowledge, there were only a few of them made, I do not know how many.

X Q. 173. And were these made by Dilworth, Porter Co.?

A. No, the plates that I have referred to were cast from a model.

X Q. 174. By what factory or concern?

A. I don't know what factory.

X Q. 175. Where did this plate that you have just been talking about differ from "Exhibit 15" of complainant?

A. The plate that we have been discussing differs from "Complainant's Exhibit No. 15" in detail only, the principle involved is practically the same. "Complainant's Exhibit 15" has corrugations on its upper surface running parallel with the rail, a rail sus-

taining shoulder, and cross-ribs on the bottom of the plate. The plate which we have been discussing had these same features with the exceptions that the corrugations were differently shaped forming corrugations both on the upper and lower surfaces of the plate.

X Q. 176. And you have a specimen of this plate in your collection of curiosities or museum, have you?

A. I have one of these plates in my possession.

X Q. 177. The principal difference between "Exhibit 15" and this last described plate consists in the fact that the bottom of the other plate was corrugated in addition to being ribbed, while "Exhibit 15" has two ribs and the rest of the bottom is flat, is that right?

A. Yes, and the corrugations were slightly differently shaped than as shown on "Exhibit 15," if I recall correctly.

X Q. 178. Who designed or suggested or got up, if you
229 know, this last mentioned style of tie-plate of which you have a specimen?

A. I think I answered that question before, to the best of my knowledge it was Benjamin Wolhaupter.

X Q. 179. But that information is derived from what others have said only, is it not?

A. I think we have in our records Mr. Wolhaupter's original drawing, although I am not sure of it.

X Q. 180. Does this plate on page 18 of "Complainant's Exhibit 21," show the form of plate for which you made a hundred thousand for the Atchison Road as you have testified?

A. It is the general type, but not the exact form. I think the plate that we made has already been introduced in evidence as "Exhibit No. 49."

X Q. 181. The only real difference between "Exhibit 49" and "Complainant's Exhibit 15" is that "Complainant's Exhibit 15" has bottom ribs, has it not, I mean except to a slight variation in the form of the corrugations?

A. Yes, with this exception and that the plate was beveled as described previously, the other plates were flat bottom.

X Q. 182. For how long after he had ceased his connection with the Railroad Supply Company did Mr. Wolhaupter continue to advise and instruct it as to tie-plates and their form or give it suggestions as to modifications of form of tie-plates?

A. I do not know how long he continued to advise or instruct the Railroad Supply Company after he ceased his connection with that company.

X Q. 183. Well, up to what date did he advise, suggest and instruct in this manner?

A. Certainly up to the time that he ceased his connection with the Railroad Supply Company.

X Q. 184. When was that?

230 A. I do not know exactly.

X Q. 185. Fix it as nearly as you can.

A. To the best of my knowledge, during some time in 1905 or 1906.

X Q. 186. Was Mr. Wolhaupter still connected with the company in 1906?

A. I could not state that definitely.

X Q. 187. When was it that the Railroad Supply Company first made or supplied a tie-plate with the top corrugations parallel to the rail?

A. I understand that the first tie-plates made under the instructions of the Railroad Supply Company with corrugations running parallel with the rail were made some time in 1904.

X Q. 188. Those were the one hundred thousand plates that you referred to made for the Atchison Road, were they not?

A. They were.

X Q. 189. When did the Railroad Supply Company first make a tie-plate with the bottom projections engaging crosswise of the tie?

A. Do you mean two continuous ribs such as shown on "Exhibit 15"?

X Q. 190. Any bottom ribs that want crosswise engaging the tie across its grain?

A. In 1904.

X Q. 191. These were the plates of which a few were cast and of which you have one in your possession that you have been testifying about?

A. Yes, as shown on "Exhibit 18."

X Q. 192. When did the Railroad Supply Company first manufacture in any quantity and supply to the railroads for use tie-plates with flanged shoulder, top corrugations parallel to the rail and bottom projections parallel to the corrugations crosswise of the tie?

231 A. The first plates made of this description in very large quantities were manufactured in the early part of 1909, although, as previously testified, plates with top corrugations, rail sustaining shoulder and continuous cross-ribs on their bottoms were made as early as 1904, to the best of my knowledge.

X Q. 193. You are now referring to the few plates which you have previously testified about and which were cast and as you were informed, a specimen given to the Santa Fe Road in 1904?

A. The plates I referred to as being made in 1904, were the cast plates.

X Q. 194. Between the time when in 1904 the cast plates with shoulder, top corrugations parallel to the rail, bottom corrugations and bottom projections or ribs parallel to the rail were made and the time in 1909 when you made in quantities tie-plates with shoulder, top corrugations parallel to the rail and the lower ribs parallel to the rail and crosswise of the tie, did the Railroad Supply Company make any of either of these descriptions?

A. There were two plates similar to "Exhibit 15" manufactured, I think, in June, 1908, and if I recall correctly I think that I made a model in 1907 of a plate having corrugations on its upper surface, cross-ribs running partially across the bottom of the plate and with a specially designed rail sustaining shoulder that was to be used with a screw-spike.

X Q. 195. Then, outside of the cast plates made in 1904, and the two plates made in June, 1908, the Railroad Supply Company did not make any tie-plates or sell any tie-plate or supply any tie-plate with top shoulder, top corrugations parallel to the rail and bottom ribs crosswise of the grain of the tie until this quantity was made in 1909?

A. The quantity made and the design and their purpose I have testified to?

232 X Q. 196. Question repeated.

A. The tie-plates made in 1904 with rail sustaining shoulder, corrugations on the top, cross-ribs on the bottom and corrugations on the bottom were made as samples and to the best of my knowledge none of this particular detailed design of plates were sold. As I have testified, I understand to the best of my knowledge that these plates made in 1904 were submitted to a certain railroad as a suggested design of plate for them to use. The plate made in 1907 as I described as being a suggested plate for a screw-spike was made as a model and none of these plates were sold. The plates made in June of 1908, similar to "Exhibit 15" were later sold in large quantities.

X Q. 197. When was the first sale in large quantities or in any quantity of plates similar to "Exhibit 15" by the Railroad Supply Company?

A. As I understand the first plates sold similar to plate shown in "Exhibit 15" with cross-ribs on its bottom I believe was in December, 1908.

X Q. 198. In 1904 the Railroad Supply Company had cast a few tie-plates with a rail sustaining shoulder, corrugations on its top, cross-ribs on the bottom and corrugations on the bottom as samples, but no one of this particular detailed design of plate was sold. To the best of your knowledge these plates were submitted to a certain railroad as a suggested design of plate to use. The Railroad Supply Company also made in 1907 a suggested plate for a screw-spike made as a model but none of these plates were sold. In June, 1908, two tie-plates similar to "Exhibit 15" were made as models. In December, 1908, tie-plates similar to "Exhibit 15" were first sold by the Railroad Supply Company. Outside of these plates which I have just described, did the Railroad Supply Company prior to December,

1908, make, supply or sell for any purpose or purposes any

233 tie-plate with flange shoulder, corrugated top with the corrugations parallel to the rail and bottom projections or ribs engaging the tie crosswise?

A. To the best of my knowledge and recollection, they did not.

X Q. 199. Referring to the cast plates in 1904 which you say you were informed were submitted to the Atchison Road as a suggested form of plate, who suggested this plate to that road?

A. To the best of my knowledge, it was submitted by Mr. Benjamin Wolhaupter.

X Q. 200. He told you he had submitted it?

A. I think our president, Mr. Hawley, told me that he submitted it.

X Q. 201. Did Mr. Wolhaupter tell you that he had submitted it?
A. No, sir.
X Q. 202. Who did tell you that it had been submitted?
A. Mr. Hawley.
X Q. 203. Did he tell you that he had been present when it was submitted?
A. No, I do not think he did but I understand that his records show that it was submitted.
X Q. 204. Who told you that the records show that?
A. Mr. Hawley.
X Q. 205. To what officer or person connected with the Santa Fe Road was this 1904 cast tie-plate submitted?
A. I don't know.
X Q. 206. Was the Railroad Supply Company then making tie-plates for the Atchison Road?
A. I think they were.
X Q. 207. No order was given, however, for a tie-plate of the 1904 cast type by the Atchison Road?
234 A. Not of the type having cross-ribs on its bottom, to the best of my knowledge.
X Q. 208. Do you know what objections there were to this 1904 cast style?

Mr. Brown: Objected to as being indefinite.
Mr. Reed: I mean made by the Atchison Road.
Mr. Brown: Question is now objected to as indefinite, immaterial and irrelevant. It is further objected to because no proper foundation has been laid for the question, it not appearing on the record thus far that there was any objection to it and, if so, that the witness knew anything about such objection.
Mr. Reed: The witness having been sufficiently tudored and instructed will now please answer.

A. I do not know what objections were raised by the railroad company as I was not present when the plate was under discussion.

Recess.

X Q. 209. This model of 1907, I believe, was made by you?
A. Yes, sir.
X Q. 210. What was the material of which this model tie-plate was constructed?
A. It was made of aluminum.
X Q. 211. And have you it in your possession?
A. Yes, I have.
X Q. 212. And who made the suggestions as to the form in which that model should be cast?

Mr. Brown: Question is objected to as totally immaterial and irrelevant and further because it is not proper cross-examination.

A. The model was made after a conference or a talk with Mr.

1353

Faulkner of the Santa Fe and I think with Mr. Robinson of
235 the Santa Fe and it was made along the lines of certain blue-prints which I think were handed to me by Mr. Robinson.

X Q. 213. Then Mr. Robinson and Mr. Faulkner conferred with you on the subject of a tie-plate and Mr. Robinson had blue-prints showing the dimensions and form and after this conference with them and with the assistance of the blue-prints furnished by Mr. Robinson you made this aluminum model or had it made under your personal supervision?

Mr. Brown: Last objection repeated.

A. My recollection of this matter is that I had a talk with Mr. Faulkner and he stated that they were contemplating a new form of tie-plate of which blue-prints had been made and he thought that I could secure them from Mr. Robinson. We looked up Mr. Robinson and I was given the prints in question. From this print I caused the model to be made. I do not recall whether it does or does not conform exactly to the print, but my general recollection is that it is similar to the print in general design.

X Q. 214. What you could properly call a substantial embodiment of the specifications and information of the blue-print so furnished?

A. The general type and dimensions I believe were similar.

X Q. 215. Both of these gentelmen at that time were, as you understand, connected with the Atchison, Topeka & Santa Fe Railroad Company?

A. To the best of my knowledge they were.

X Q. 216. There was one such model made at that time and in this connection?

A. I do not recall, I think there were two.

X Q. 217. Do you know what was done with the one that you have not in your collection now?

236 A. To the best of my recollection one of those models was sent to one of our mills in order to determine whether it could be manufactured. I do not think it was returned although I am not absolutely positive on this.

X Q. 218. How did the model in question compare with "Complainant's Exhibit 15" as to structure?

A. The model in question compared with "Complainant's Exhibit 15" or rather differed from it, as I recall, as follows: The grooves on the top of the plate were half rounding instead of the shape as shown in "Exhibit 15." The rail bearing surface of the plate I think was canted or beveled. The shoulder on the plate was what I would term an overhanging shoulder, that is, it overlapped the outside flange of the rail. The holes to receive the screw-spikes on the outside or shoulder side of the plate were round and set back from the shoulder. The ribs on the bottom of the plate did not extend all the way across the bottom of the plate as shown on "Exhibit 15."

X Q. 219. Do you know what has become of the blue-prints that were furnished you on this occasion?

A. Yes, they are in my possession. I think there was one print.

X Q. 220. This type of tie-plate which was specified in the blue-print and of which you made the aluminum model was intended to be used in connection with screw-spikes for attaching it to the tie and not in connection with ordinary spikes?

A. My recollection is that this model was designed for use with screw-spikes.

X Q. 221. Now, there was a model tie-plate gotten up in 1908, was there not, in June?

A. There was.

X Q. 222. Before I go on with that I will ask you whether there were any tie-plates manufactured for use in conformity with
237 this model of 1907 by the Railroad Supply Company?

A. They were manufactured for use as samples.

X Q. 223. To what extent?

A. To the extent of, I think, two, one of which I believe was submitted to the mill as to its manufacture, the other one was shown to Mr. Faulkner.

X Q. 224. But they were not manufactured beyond these two for commercial use in the road, were they?

A. They were the only two manufactured and used for the purposes stated.

X Q. 225. What did you personally have to do with the construction of the model or models of tie-plates in 1908?

A. I caused these models to be made at our factory.

X Q. 226. And from what source or person did you get the suggestions for the model of June 1908?

A. Mr. Hodges of the Santa Fe in a personal conference asked if I could furnish him a model or sample of our Harriman plate with ribs on the bottom.

X Q. 227. What did you then do?

A. I told Mr. Hodges that I would endeavor to have this made for him, that in order to make this sample like he desired it it would be necessary to have a very thick Harriman plate so that the bottom of the plate could be planed off leaving the ribs; this would take some time as it would necessitate our rolling of plates other than we were then making as far as the thickness of the plate is concerned. After investigating the matter I found that this plate could be manufactured at our factory and I had it made.

X Q. 228. How many of these samples or models were made in June, 1908?

A. There were two made at about that time, one was
238 made on his first request, and we afterwards made another one.

X Q. 229. Were you furnished with any specifications or blue-prints by any person connected with the Santa Fe Road in connection with these models or samples?

A. As I recall the proposition in interviews with Mr. Storey, the chief engineer, and with Mr. Hodges, the purchasing agent of the Santa Fe, some time in the spring of 1908, I furnished Mr. Storey with samples of our Harriman plate and afterwards received, I think, both from him and from Mr. Hodges, blue-prints showing the

suggested form of plate. When Mr. Hodges asked me for these samples, as I recall it, he merely referred to the Harriman type of plate with the ribs on the bottom. When we made these samples I think we followed in a general way the detailed dimensions on the prints which we had received from the Santa Fe.

X Q. 230. When was it that you furnished the samples of the Harriman plate to Mr. Hodges?

A. I furnished the samples of the Harriman plate first to Mr. Storey in the early part of 1907, I don't recall the exact date. I think that later there were samples of the Harriman plate furnished to Mr. Hodges.

X Q. 231. Before these models of June, 1908, were made?

A. My recollection is that they were given him about the same time.

X Q. 232. This drawing on page 18 of "Exhibit 21" correctly shows what you call the Harriman plate, does it?

A. It does.

X Q. 233. The plate that is headed "Flat Bottom Corrugated Top Shoulder Tie-Plate?"

A. Yes, sir.

239 X Q. 234. How did the models of June, 1908, compare with "Exhibit 15" of complainant?

A. The models of June, 1908, were almost identical to the best of my recollection, with "Exhibit 15" with the exception that they were, I believe, not quite as long and the rail sustaining shoulder on the top of the plate was higher. The engineering department wanted a plate with a shoulder three-eighths of an inch in height originally and I convinced them that they could not use a shoulder of this height for the rails that they desired to use in connection with this plate.

X Q. 235. How did the quantity of tie-plates which you have stated were manufactured and delivered in December, 1908, compare with the model of June, 1908, in their structure?

A. The quantity of plates were sold in December, 1908, first rolled in January, 1909, a portion of them being similar to "Complainant's Exhibit 15," the only difference between these plates and the models made in June, 1908, being the slight difference in length and the height of shoulder. The other portion of these plates were of the same general design with the corrugations on their upper surfaces, rail sustaining shoulder and cross-ribs on their bottoms but designed for use with lighter sections of rails.

X Q. 236. These sales of December, 1908, delivered in January, 1909, were to the Santa Fe Road, were they not?

A. They were.

X Q. 237. When, so far as you know, did the Railroad Supply Company begin the manufacture of the tie-plate shown in the upper figure of page 16 of "Complainant's Exhibit 21," styled "C. A. C. Claw and Shoulder Tie-Plate"?

A. I do not recall exactly, I think it was about 1904 that
240 some of these plates were made by the Railroad Supply Company.

X Q. 238. Had this form of plate been on the market before that time?

A. Yes, I understand that it had.

X Q. 239. And in actual use?

A. Yes, it had been in actual use.

X Q. 240. Could you tell us exactly or approximately when this C. A. C. Claw and Shoulder Tie-Plate was first introduced and used?

A. Sometime in the nineties, I don't know exactly when.

X Q. 241. Before or after the original Wolhaupter patent tie was introduced.

A. I am inclined to believe it was before the Wolhaupter type as made in 1895.

X Q. 242. This picture on page 16 of "Exhibit 21" shows the C. A. C. Claw and Shoulder Tie-Plate as it was manufactured and used?

A. Practically the same.

X Q. 243. It has a flange shoulder on the top clearly shown, has it not?

A. Yes.

X Q. 244. And it has projections on the bottom for engaging with the tie, has it not?

A. It has what is termed four claws on the bottom.

X Q. 245. And these claws are for the purpose of engaging with the tie?

A. Yes, these claws are for the purpose of engaging with the tie?

X Q. 246. Were these claws pointed or did they terminate in edges.

A. I do not recall their exact shape of point in that particular plate, but they were about as shown, so far as I know, in the illustration on page 16 of "Exhibit 21."

241 X Q. 247. And the lower figure on page 16 of "Exhibit 21" shows the projections or claws on the bottom of the plate?

A. It shows a suggested claw and I believe the claws were made in approximately this shape.

X Q. 248. And these claws are elongated and have edges or sides paralleling the rail and crosswise of the tie?

A. My recollection is that they were little less than an inch long and about three-quarters or a half-inch deep and were in parallel line with the rail.

X Q. 249. So that the claws on the bottom of the C. A. C. Claw and Shoulder Tie-Plate engaged in the fibre of the tie crosswise to the length of the tie?

A. Yes, they engaged the grain of the wood across the fibre.

X Q. 250. Could you tell us approximately or accurately when the Q & W form of tie-plate was first marketed and used by any one?

A. To the best of my knowledge, it was marketed in the latter part of 1898 and was used in the early part of 1899.

X Q. 251. The Railroad Supply Company is still manufacturing and marketing or procuring the manufacture of and marketing all the different styles of tie-plates shown in "Exhibit 21," is it not?

A. To a greater or less extent, yes. We are in a position to furnish the plates shown in the catalogue, "Exhibit 21."

X Q. 252. Well, I didn't intend to give you an order but simply to ascertain whether, as a matter of fact, all those kinds or styles of tie-plates are still being marketed or used on railroads today?

A. All of these plates as shown in catalogue, "Exhibit 21"
242 are doubtless in use on some railroad today. The plate called the C. A. C. Claw and Shoulder Tie-Plate is not extensively used. Neither have any sales of these plates been made for some years.

X Q. 253. Referring to "Complainant's Exhibits 13, 29, 37, 38, 39, 40, 41, 49, 53 and 55," I believe these were prepared by you?

A. They were.

X Q. 254. These are theoretical drawings, are they not, intended to illustrate your conception of the effects or results of forces and conditions operating upon rails, tie-plates and ties under the different conditions indicated?

A. "Exhibits Nos. 29, 37, 38, 39, 40 and 41" illustrate theoretical forces and conditions which have been proven by actual experience to be correct.

X Q. 255. All of these drawings, however, are theoretical and not taken from anything that actually exists or has existed?

A. The conditions shown in these drawings have existed.

X Q. 256. When?

A. On railroads at different times.

X Q. 257. What railroad?

A. It is local conditions that might exist on most any railroad.

X Q. 258. On what railroads are you willing to swear any one of the conditions shown in those drawings that were exhibited to you actually and as a matter of fact existed?

A. I have seen the condition as shown in "Exhibit No. 29" on the tracks of the Illinois Central Railroad under passing train. I have seen the condition illustrated in "Exhibit 39" on the tracks of the D. L. & W. Railroad, also the condition as exists in "Exhibit No. 40."

243 X Q. 259. Are any of these exhibits which were shown you photographs or reproductions of photographs?

A. None of them were photographs, some of them were reproductions from zinc etchings on record in the Railroad Supply Company.

X Q. 260. Now, where and on what occasion on the Illinois Central Track did you see the ties pressed down and the rail bent exactly as shown in "Exhibit 29" when a couple of hoops were rolled over the track, as shown on "Exhibit 29"?

A. I never saw a couple of hoops rolled over the track, but I have seen the rail deflect under passing load on the suburban track of the Illinois Central.

X Q. 261. Did you take any measurement or memoranda of the extent of the depression or bending that you witnessed?

A. I did not, but it was quite discernible to the eye.

X Q. 262. Now, I ask you again, are not these exhibits that you

have been examining simply theoretical drawings intended to illustrate your general conception and ideas on this subject and to express in a general way your ideas?

A. While these drawings are theoretical, it is a theory that has been proved to be correct and represents in a general way the action on the track under traffic.

X Q. 263. Look at "Exhibits 28, 30, 31, 32, 33, 34, 35, 36, 43 and 48." These I think are all photographs or some kind of reproductions from photographs. Did you make any of these photographs yourself?

A. "Exhibit 43" is a tie which I secured and had photographed. The rest of the exhibits referred to are photographs or reproductions of photographs in the records of the Railroad Supply Company.

X Q. 264. Did you make any of these photographs yourself?

244 A. I caused to be made the photograph of "Exhibit 43," and had reproductions from photographs of the other exhibits made.

X Q. 265. Did you make any of these photographs yourself?

A. No, sir, I did not operate the camera which took the pictures.

X Q. 266. Did you ever see any of the objects which are shown in these pictures of these exhibits when it was in actual position in a railroad track, if so, select the one and tell us where it was and what railroad?

A. No, I have not seen any of these particular exhibits in their actual positions in the track. I saw the tie as shown in "Complainant's Exhibit 43," very shortly after it was taken from the track of the Chicago City Railway Company at the corner of Dearborn and Adams streets, but I have seen and examined many ties and tie-plates in actual track where the conditions are practically same as shown in the exhibits in question.

X Q. 267. Then, as a matter of fact, you do not know the conditions of forces that attained in any of these photographs or pictures except as any one can judge them by looking at the pictures themselves?

A. I have examined track and these forces and conditions as shown have been corroborated by me in my personal examination of track conditions.

X Q. 268. You mean generally, however, and not the specific instances shown here?

A. I did not see the ties and plates shown in those particular exhibits in actual track but my experience was corroborated that these exist.

X Q. 269. This set of photographs was procured by the Railroad Supply Company for the purpose of exploiting and persuading the purchase of tie-plates by railroads, was it not?

245 A. Yes, and for gathering general data as to the use and work of tie-plates on railroads.

X Q. 270. Are letters-patent No. 469,386 to D. F. Dunham, administratrix of C. H. Dunham, deceased, railroad tie-plate, dated February 23, 1892, owned by the Railroad Supply Company?

A. I think it is controlled by the Railroad Supply Company.

X Q. 271. Do you know when these letters-patent were purchased by the Railroad Supply Company?

A. I do not know the exact date. It was some time prior to 1898, but I do not know the year. I am under the impression that it was bought at that time or controlled.

X Q. 272. Did the Railroad Supply Company, so far as you know, ever manufacture tie-plates of the construction shown by the drawings and specifications of the Dunham letters-patent?

A. Not to my knowledge.

X Q. 273. There is no doubt as you look at those drawings in connection with the specification of the Dunham letters-patent, of which I now show you a copy, that the top of the tie-plate is corrugated?

Mr. Brown: Question is objected to as not calling for the best evidence, the patent itself being the best evidence of its contents; further objected to as not proper cross-examination and, third, as calling for an opinion of the witness, no proper foundation having been laid therefor as to his qualifications, and, fourth, as attempting to introduce patent expert evidence from a witness who has not qualified as a patent expert but who has, in his direct examination, stated that he is "not a mechanical or civil engineer and have had no technical school education along these lines."

246 A. In my opinion it is corrugated in a certain sense of the word, but the corrugations are not as were made on the earlier types of Wolhaupter plate.

X Q. 274. Corrugations are plainly apparent in Figs. 1, 2 and 3 of this drawing, are they not, on the top of the plate?

Mr. Brown: Same objections.

A. Yes, there are corrugations on the tops of the figures in question.

X Q. 275. And the corrugations run parallel with the fibre of the tie and the bottom of the rail rests on them at right angles to their length.

Mr. Brown: Same objections.

A. Yes, they do.

X Q. 276. And the corrugations in the Dunham patent drawing extend in the same direction as to tie and rail as in the Wolhaupter patent No. 538,809, "Exhibit No. 1," do they not?

Mr. Brown: Same objections.

A. Yes, as shown in Figs. 2 and 1.

X Q. 277. And it is also true as to the corrugations shown in the drawings of Wolhaupter patent No. 691,332, "Exhibit No. 2," is it not?

Mr. Brown: Same objections.

A. It would appear so.

X Q. 278. But in Wolhaupter patent No. 721,644, "Exhibit 3," the corrugations are shown parallel to the rail, are they not?

Mr. Brown: Same objections.

A. On Fig. 6 they are apparently so.

X Q. 279. And how about Fig. 3?

Mr. Brown: Same objections.

A. The corrugations appear as shown at a slight angle.

247 X Q. 280. And it is true, is it not, that in all of the Wolhaupter plates manufactured down to 1904 the top corrugations were at right angles to the rail and lengthwise of the tie, that is, they were in the direction as to rail and tie as in the Dunham patent?

A. To the best of my knowledge all of the plates made prior to 1904 of the corrugated top pattern had corrugations on the top of the plate at right angles to the rail and running lengthwise of the plate.

X Q. 281. I believe in your direct examination you subdivided tie-plates into two great classes, those with flat tops and those with corrugated tops, is that right?

A. I believe I did.

X Q. 282. In which class would you put the Dunham patent or a tie-plate made according to the Dunham patent?

A. In the corrugated top type.

X Q. 283. If a tie-plate had only one groove or channel on its top in which class would you place it?

A. Naturally it would be placed under the corrugated top type, if it was corrugated.

X Q. 284. Would not a single groove on the top of a tie-plate extending its entire length bring it within the category of being a corrugated top tie-plate?

A. It seems to me that would depend upon the definition of the word "corrugated" and the shape of the groove that you refer to.

X Q. 285. Well, you wouldn't call it a flat top tie-plate, would you?

A. Not exactly, still it might not be corrugated.

X Q. 286. Your division of tie-plates was into tie-plates with flat tops and tie-plates with corrugated tops. You exclude tie-plates having a single groove or depression in the top from the flat top class, it would seem that it must therefore fall into the corrugated class, according to your division, where will you put it?

248 A. I did not find in making up the chart in question any tie-plate that would deserve to be called a corrugated plate other than those that I have shown as being general types of corrugated plates and therefore I did not have any occasion, to the best of my knowledge, to make another division.

X Q. 287. Well, you are having occasion to do it now so I again ask you into what class you would put a tie-plate with a single groove or depression extending its whole length, flat top or corrugated?

A. If it had a single groove or depression like the Wolhaupter

plates running its full length I would put it under the corrugated top division.

X Q. 288. Please define "corrugation."

A. I think the definition of a corrugation is a wrinkled or crumpled surface contracted into ridges and furrows.

X Q. 289. How many ridges and how many furrows must you have in order to make a corrugation?

A. I presume one ridge and one furrow will produce a corrugation.

X Q. 289. Wouldn't you have to have two ridges in order to have a furrow?

A. Yes, I believe you would, two ridges and one furrow.

X Q. 290. Then any surface having a furrow and two ridges is corrugated?

A. It might be considered so.

And thereupon an adjournment was taken to Thursday, July 15, 1909, at 10 o'clock in the forenoon.

G. R. WILKINS,
Notary Public.

249 CHICAGO, ILLINOIS, July 15, 1909.

Met pursuant to adjournment.
Present: Counsel as before.

Cross-examination of the witness Bell resumed by Mr. Reed:

X Q. 291. In reply to question as to whether any surface having a furrow and two ridges were corrugated you answered that it might be considered so. In your judgment, is such a surface corrugated?

A. If it was a distinct ridge and a distinct furrow I would, in my opinion, consider it a corrugation.

X Q. 292. And you consider it corrugated whether the ridge was rounded in section or angled as the ridges in "Exhibit 15"?

A. Yes, I would consider the ridges as shown in "Exhibit 15" and the furrows show corrugations, in my opinion.

X Q. 293. Look at the drawing attached to specification for letters-patent No. 203,370, May 14, 1878, to I. Wells for railway chair and state whether the surface on Fig. 2 is, in your opinion, corrugated.

Mr. Brown: Objections stated after X Q. 273 are here repeated. Also as irrelevant and incompetent.

A. The upper surface, in my opinion, is corrugated.

X Q. 294. The construction in these figures or drawings attached to the Wells specifications show- a device for supporting a rail with flange shoulders, upper surface corrugated parallel to the direction of the rail and a lower projection from the under surface for engaging in the tie crosswise of the grain of the tie, do they not?

Mr. Brown: Same objections.

A. The device referred to shows to me a structure with
250 corrugations on its top to be used where two rails are joined together to support the ends of the rails joined. There is a flange shoulder against which the rail rests, but it is not provided so that spike holes can be driven through the outside or inside of the device itself. The lower projection on the under surface can only be used where the tie is recessed or cut away to receive this projection.

X Q. 295. You understood the question that I asked you, did you not?

Mr. Brown: Same objections.

A. I think I did and have tried to answer it.

X Q. 296. Then why do you not answer the question? I asked you if the device shown in these illustrations did not exhibit flange shoulders for the rail, corrugations on the top parallel to the rail and a projection on the lower side for engaging in the tie crosswise to the tie. Now, do these illustrations show those features or do they not?

Mr. Brown: Same objections.

A. They evidently do.

X Q. 297. Look at the drawings attached to specifications letters-patent 485,030, W. Goldie, tie-plate, patented October 25, 1892. Do not the drawings show a flange shoulder, a single depression or shallow groove on the top extending the entire length of the plate parallel to the rail and lower ridges projecting from the under surface for engaging in the tie crosswise of the grain thereof?

Mr. Brown: Same objections.

A. The drawings referred to evidently show a flange shoulder and a depression extending the width of the plate parallel with the rail and with the lower ridges projecting from the under surface.

X Q. 298. And these drawings show that the rail is supported by the top surface of the plate on each side of the depression extending parallel to the rail and the length of the plate?

Mr. Brown: Same objections.

251 A. This is evidently so but we commonly know the direction of the groove as being the width of the plate instead of the length.

X Q. 299. How is it that you class the Goldie plate as a flat top plate when, as a matter of fact, the rail supporting surface shows plainly this depression or groove?

Mr. Brown: Same objections.

A. I class the Goldie plate as a flat or practically flat top tie-plate for several reasons. The manufacturers in their advertisements or published articles, as I recall it, did not show any depression under the rail. The drawings which I have made are from a sample of this plate which I have in my possession and the depression is so

slight that it is hardly discernible. True, it can be seen. I think, in my original testimony, I testified that this plate had a slight concave and convex surface.

X Q. 300. As a matter of fact, this Goldie plate both in its manufacture and in the drawings attached to the specifications for letters-patent showed the depression on the upper surface, and such depression was noticeable to any person who saw even the patent drawings or the plate itself?

Mr. Brown: Same objections.

A The patent drawings that you have shown me shows the depression to a greater degree than is shown in the manufactured sample which I have. The depression can be seen by close examination of the plate but it is very slight.

X Q. 301. Still, both in the drawings and in the plate as you saw it, the depression is sufficient to be seen and to suggest to any one inspecting either the drawings or plate as constructed the making of the upper surface with a groove or depression across its width and parallel to the rail, is this not true?

Mr. Brown: Last objection is repeated and the question is
252 further objected to as manifestly incompetent and improper, it not having been shown that this witness has any knowledge of what might be suggested "to any one," and also as calling for an opinion and a conclusion and as attempting to obtain from this witness evidence which should properly come, in the first instance, if at all, from the defendant's own witness. And further the question is objected to as intentionally classing the Goldie tie-plate construction as identical with the drawings of the Goldie patent referred to in the question when such is not shown to be the fact and is not in fact the fact.

A. The depression can be seen from the drawings and plates when they are examined. The depression in the plate, however, as stated before, is very slight. What this depression might suggest I could not say.

X Q. 302. When you saw the plate which you have referred to and have just been testifying about, did you notice the depression?

Mr. Brown: Same objections.

A. If I recall correctly when I first saw the plate I thought that the depression was merely a defect in manufacturing. I noticed that it was slightly depressed under the rail but it did not appear to me that it was put there on purpose.

X Q. 303. When in your examination did you discover that the depression was intentional and not the result of defect or use?

Mr. Brown: Same objections.

A. I do not remember exactly when, I think it was some time ago when I was discussing this plate with one of the firm who manufactured it.

X Q. 304. When and where did you first see or obtain this plate that you have been speaking about?

Mr. Brown: Same objections.

253 A. I saw the plate first, if I recall correctly, about 1900 or 1901. This particular plate came to me from the offices of the Q. & C. Company, if I remember correctly.

X Q. 305. And when and with whom did you discuss this plate as you have indicated?

Mr. Brown: Same objections.

A. I can not state exactly when but I remember it was with Mr. Schleiter.

X Q. 306. You were then told that the depression was intentional and that Goldie plates were made with that sort of depression?

Mr. Brown: Same objections.

A. I do not remember that I was told exactly that the depression was intentional, but if I recall correctly it came out during the conversation that the plates were made by that company with a depression as was shown by the sample.

X Q. 307. The manufacturing firm was Dilworth, Porter Company, was it not?

A. It was.

X Q. 308. When did you discuss the Goldie plate with Mr. Wolhaupter?

Mr. Brown: Objected to as immaterial and irrelevant.

A. I do not recall.

X Q. 309. Did you ever so discuss?

A. I may have, but I can not recall at the present time.

X Q. 310. What was the occasion of your procuring a sample of the Goldie plate?

A. It was turned over to us with other samples and information from the Q. & C. Company.

X Q. 311. That is when the Railroad Supply Company purchased the tie-plate business of that company?

A. I think it was turned over about that time.

254 X Q. 312. Examine the drawing attached to specifications for letters-patent No. 540,356 to W. Goldie for "Tie-Plate," June 4, 1895. Does not this plate show a flange shoulder, a surface with a shallow groove or depression running parallel to the rail the width of the plate and short projections or claws at each corner projecting downward from the lower surface at the corner for engaging in the tie transverse to the grain of the tie?

Mr. Brown: The objections to X Q. 273 and X Q. 301 are repeated to this question.

A. The drawings attached to specifications of letters-patent referred to, Fig. 2, Fig. 3, evidently show a depression running parallel to the rail the width of the plate and short projections and claws at

each corner. Fig. 2 shows a rail sustaining shoulder on top of the plate.

X Q. 313. And the claws are arranged as to their length parallel to the rail and transverse of the tie?

A. As shown in the illustration referred to they are.

X Q. 314. Have you ever seen the Goldie form of plate either of the types shown in the drawings attached to the letters-patent specifications exhibited to you in actual use in railroads?

Mr. Brown: Last objections repeated.

A. Not to my knowledge, no.

X Q. 315. Is it not your understanding that plates of these types were largely manufactured and sold and on the market prior to the purchase by complainant of the Q. & C. Company's business?

Mr. Brown: Objected to as irrelevant and immaterial.

A. Of the two types last referred to the one with the continuous cross-rib on the bottom I have heard of only small sales. Of the latter type, that is, with claws on each corner, and the slight
255 depression under the rail, I do not recall ever having seen one nor do I of my own knowledge know of what sales were made, if any.

X Q. 316. When did you first hear of the Goldie form of tie-plate being on the market as to either type?

A. I do not recall that I have heard of its being on the market to any appreciable extent and in our business transactions I do not recall it as ever having been referred to by a customer with but one exception.

X Q. 317. In your diagram, "Exhibit 56," you show flat top with shoulder cross-rib bottom 1892 Goldie cross-rib. Was that statement, although referred to as flat top, the Goldie tie-plate of the form shown in the sample which you have and which you have testified about?

A. It was the general form and illustrated in my opinion, the sample plate which I have and is illustrated in the same manner as the manufacturer illustrated this plate, with the explanation, as I think I testified to, that it had a slight concave and convex surface. It was so nearly flat, the depression was so very slight, that, as testified to before, it could hardly be considered a depression when applied under a rail.

X Q. 318. What do the dates in "Exhibit 56" which are enclosed in a circle and appear immediately beneath each form of plate indicated. Are they intended to show the time when the plate came on the market according to your best information?

A. As a general proposition, yes, they were intended to show, to the best of my knowledge, as far as I could determine, the dates or times, or I better say years when these designs or types were considered.

X Q. 319. Are not these figures in each instance intended to furnish your best information as to the year in which the respective styles of plates were put on the market either by advertisement or manufacture and sale?

A. Yes, in a general way.

256 X Q. 320. And this statement and showing in reference to the Goldie cross-rib plate, although it designates and shows a flat top was really accompanied by a manufacture of this type with a slight depression which you have referred to as being exhibited in the sample which you have?

A. I do not remember exactly how I fixed the date. I think it was advertising literature and reports that I have seen some of them having been used that year. The manufactured sample, as I said, come into my hands, as near as I can remember, in 1900 or 1901.

X Q. 321. The point is not the date in this question, but the style manufactured. You show and specify in "Exhibit 56" a flat top Goldie plate. I understand you to testify that the manufacture, so far as you know, was with this slight depression exhibited in the sample which you have?

A. The depression was so slight that I considered the plate practically a flat top and in testifying explained that it had a slight concaved and convexed surface.

X Q. 322. You have already so frequently advised us of the slightness of the depression that it is evident that this slightness is almost an obsession with you. What I want to know is whether, as you understand it, the actual manufacture of Goldie tie-plates of this type was with this slight depression or not, or whether the manufacture of the Goldie tie-plate was with an absolutely flat top?

Mr. Brown: The question is objected to as having been repeatedly answered by the witness. In every instance where the witness has in any way referred to the Goldie plate as being on the market he has with apparent distinctness and intelligence admitted that it did not have a perfectly flat top plate but that it did

257 have a top surface with this slight depression inquired of, and no reason is seen for the constant repetition of the question particularly in view of the fact also that Goldie tie-plates of the period inquired of are accessible to the defendants and can be introduced in evidence to speak for themselves. Complainant offers to furnish one of such plates if counsel desires.

Mr. Reed: If counsel has finished his combination of argument, testimony and instructions to the witness I would like to have the question answered. However, if counsel will stipulate that the Goldie tie-plate was always manufactured with this slight depression or groove I will waive answer to this question.

Mr. Brown: Counsel declines to make any stipulation because he believes proof is better and repeats his tender of the actual Goldie plates as manufactured if they are of any service and relevance to the issues in the case.

A. I have seen but one or two of the plates known as the Goldie cross-rib and both show a slight depression referred to by me. To the best of my knowledge, as previously testified, these were manufactured by Dilsworth-Porter Company, and I assume that other plates of this design were made with this depression.

X Q. 323. Then, so far as you have observed, or are advised, the manufacture of the Goldie plate was with this slight depression?

A. The Goldie plate of this design under consideration, yes.

X Q. 324. From your inspection would you say that the Goldie plate which you have in your possession had been in actual use on a railroad or not?

A. It would be impossible to say but, in my opinion,
258 it had not been in actual use, although it was evidently designed and punched to be used.

Cross-examination by Mr. Reed closed.
Examination of the witness Bell closed.

EDWIN H. BELL.

Adjourned subject to agreement of counsel.

G. R. WILKINS,
Notary Public.

MANHATTAN, LONG ISLAND, June 30, 1909.

Met pursuant to adjournment.
Present: Counsel as before.

And thereupon CHARLES F. QUINCY, a witness produced on behalf of the complainant, having been first duly cautioned, and sworn, upon oath, testifies as follows in answer to interrogatories by Mr. Brown:

Q. 1. Please state your name, age, residence and occupation.

A. Charles F. Quincy; over 21; New York City, N. Y.; manufacturer, president of the Q. & C. Company.

Q. 2. How long have you been connected with the Q. & C. Company?

A. In 1887 it was the Dunham Manufacturing Company. About 1891 and 1892 the name was changed to the Q. & C. Company. I have been connected with it since 1887.

Q. 3. In what capacity?

A. At first as the treasurer but since about 1891 or 1892 as president.

Q. 4. What was the business of that company?

A. Manufacturing and selling railroad specialties.

259 Q. 5. Including tie-plates?

A. Including tie-plates, yes, sir, commencing with about 1888 or 1889.

Q. 6. What tie-plate was manufactured and sold by this company at the period you mention?

A. The plate known as the Servis.

Q. 7. Please look at "Complainant's Exhibit No. 26" which has already been identified in evidence as an illustration of the Servis flat top tie-plate and state how this compares with the Servis tie-plate first made and sold by your company.

Mr. Cooke: Objected to as immaterial.

A. This illustrates the Servis tie-plate.

Q. 8. How long were you actively and personally engaged in the manufacture and sale of tie-plates?

A. From about 1888 to about 1904.

Q. 9. During that period what opportunities did you have to familiarize yourself with the details of the business of manufacturing and selling these tie-plates and the practical condition calling for the use of such tie-plates and their installation and use?

A. Well, I very generally followed all the details of the manufacture by frequent visits to the mills. I oftentimes personally made the sales and followed the application of the plates by inspection of the track.

Q. 10. At the time you put the first Servis tie-plate on the market were there any other tie-plates on the market to your knowledge and, if so, what?

A. Nothing except the heavy cast steel chairs and a very heavy plate that was rolled, I think, and used only by the Pennsylvania Railroad.

Q. 11. What was the nature of this heavy rolled plate that you speak of?

Mr. Cooke: Objected to as immaterial.

260 A. More like the English chair that was used.

Q. 12. In the deposition of another witness in this case a chart has been introduced marked "Complainant's Exhibit No. 57, Sales Chart," in which the witness has explained that the blue line on this chart indicates the volume of sales of tie-plates having flat upper top surface during the years mentioned on the chart and I will show this chart to you and ask you how the quantities therein mentioned of these flat top plates correspond with your knowledge of the sales of the Servis tie-plate during the years from 1890 to 1904?

(See p. 103.)

Mr. Cooke: Objected to as immaterial, irrelevant and incompetent and for the further reason that it has not been shown that the witness is qualified to answer such question.

A. I have no figures before me and can only depend on my memory. I would, however, think these figures were at least a low estimate of our sales. The actual records were left by me with the Railroad Supply Company as I was president of that company for a period of over a year.

Mr. Reed: Motion to strike out the answer for the reason that it is not based on any knowledge of sufficient accuracy to aid the witness.

Q. 13. Have you, within the last year examined, or had under your personal direction the records of the Q. & C. Company examined for the purpose of ascertaining the volume of sales of that company of the Servis tie-plate?

Mr. Cooke: Objected to as immaterial and incompetent.

A. I have within a few months. I went over the records which I have personally kept of these details.

Mr. Reed: Same motion on same ground.

261 Q. 14. And what, if anything, did you do with the results of that examination?

Mr. Cooke: Objection repeated.

A. I furnished a copy of those figures to Mr. Bell of The Railroad Supply Company.

Q. 15. Are you familiar with the tie-plate that is known on the market as the "Q. & W. Plate"?

Mr. Cooke: Same objection.

A. I am.

Q. 16. Please look at "Complainant's Exhibit No. 25, Illustration of Q. & W. Tie-Plate" and state whether or not that is a proper illustration of the tie-plate of that name as put upon the market.

Mr. Cooke: Same objection.

A. It is.

Q. 17. Please look at the two exhibits which I now hand to you marked "Complainant's Exhibit No. 30, Cedar Tie Showing Tie-Wear" and "Complainant's Exhibit No. 31, Oak Tie Showing Tie-Wear," and state if you recognize these and, if so, tell what you know about them.

(See pp. 116-117.)

Mr. Cooke: Same objection.

A. These photographs were made under my instructions from sample ties which we obtained from the railroads.

Q. 18. About when were these illustrations made and for what purpose did you have them made?

Mr. Cooke: Same objection.

A. About the year 1893, the purpose being to show by comparison a tie with and without a tie-plate.

Q. 19. Please tell us what the tie-plate is and what it is used for?

Mr. Cooke: Same objection.

262 A. To protect the cutting of the tie, the wear on the spike and also the canting of the rail. A tie-plate is a strip of metal underneath the rail and on the tie.

Q. 20. You recall when the Wolhaupter tie-plate came on the market or about when?

A. I couldn't answer that from memory to be exact.

Q. 21. Well, with reference to the time when you put the Servis tie-plate on the market, it was after that date, was it not?

Mr. Cooke: Objected to as leading.

A. It was several years.

Q. 22. And between the date of the introduction on the market of the Servis tie-plate and the date of the introduction of the Wolhaupter tie-plate what other tie-plates came on the market that you remember?

Mr. Cooke: Objected to as irrelevant, immaterial and incompetent.

A. A type of plate called the Goldie and another called the C. A. C.

Q. 23. Describe the C. A. C. tie-plate.

Mr. Cooke: Same objection.

A. I cannot describe it. It was a plate that only had a short life, and I do not remember the details.

Q. 24. Please look at "Complainant's Exhibit No. 54, Claw Bottom Tie-Plate," and state if you know what that represents.

(See p. 139.)

Mr. Cooke: Same objection.

A. I could not say yes or no as to that being the C. A. C. type to my recollection.

Q. 25. Can you state whether or not the C. A. C. tie-plate was a claw plate?

A. It was of claw plate type.

Q. 26. Please look at "Complainant's Exhibit No. 50, Tie-
263 Plate with Longitudinal Bottom Flanges" and state whether or not you ever saw a plate like that illustration.

(See p. 134.)

Mr. Cooke: Same objection.

A. I have.

Q. 27. Was such a plate as that on the market and, if so, under what name?

Mr. Cooke: Objection repeated.

A. That was one of the various types that came under the general name of the Servis plate.

Q. 28. I notice on these two exhibits Nos. 30 and 31 showing the two ties one unprotected and the other protected with a tie-plate certain printed matter, for example, on No. 30, it is stated, "Cedar Tie Protected with small Servis tie-plate on Western Trunk Line twenty miles west of Chicago, three years service," and on the other tie on the same exhibit, "Cedar tie unprotected from the same road three years' service," and recalling your answer to Q. 17 wherein you stated that the photographs of these exhibits were made under your instructions, I ask you to state what you know about the accuracy of the information printed on those exhibits to which I have referred. In other words, tell us just how you got those ties and the photographs and the information and all about it.

Mr. Cooke: Same objection.

A. These sample ties were furnished us by the Atchison, Topeka & Santa Fe Railroad at our request and were accompanied by affidavits setting forth the information that is shown in these illustrations.

Mr. Reed: Motion to strike out answer as giving secondary evidence attempting to state the contents of documents without production or explanation and as incompetent and immaterial.

264 Q. 29. Did you yourself see these ties?

Mr. Cooke: Same objection.

A. Yes, sir, many times.
Q. 30. Do you happen to know what finally became of them?

Mr. Cooke: Same objection.

A. I think they became absolutely worn out or useless by the service of taking them about throughout the country to show the railroad officials the value of the tie-plate.
Q. 31. Mr. Quincy, do you know who first introduced commercially a flanged bottom tie-plate?

Mr. Cooke: Same objection.

A. To the best of my knowledge the Servis type was the first at that time. Mr. Servis, the inventor, gave by license all his rights to an incorporation called the Servis Tie-Plate Company and from that company my company obtained a license for the exclusive manufacture and sale.

Mr. Reed: Motion to strike out on the same grounds as above stated.

Q. 32. And is the Servis tie-plate being manufactured and sold at the present time and, if so, by whom?

Mr. Cooke: Same objection.

A. The Railroad Supply Company are the only ones that I know that are making them.
Q. 33. You may state whether or not you are connected with the Railroad Supply Company directly or indirectly and whether or not you have any interest in the outcome of the present litigation in which you are giving your deposition.
A. I am not connected and have no interest whatsoever in the Railroad Supply Company, and have no interest whatsoever in the outcome of the litigation.

Direct examination closed.

265 Cross-examination of the witness Quincy by Mr. Reed:

X Q. 34. Did you personally see the two ties that are photographed in "Exhibits 30 and 31" while they were in the road-bed and in service?
A. No, sir.
X Q. 35. Do you know personally of your own knowledge from where they came?
A. I have every reason to believe that my answer is correct.

X Q. 36. I didn't ask you that, I asked you if you know personally of your own knowledge where they came from.

A. I did not take them from the track or see them taken from the track.

X Q. 37. Then you don't know personally from what source they came from?

A. I think I do. Personally I saw many in the tracks of the Santa Fe Road showing conditions like those in the photographs, after which I made a request for samples to be accompanied by affidavits and which was done by the railroad.

X Q. 38. But, except as you are advised by the affidavits and the statements of the railroad people, you have no knowledge as to the origin or use of these ties?

A. Only as I have answered in my previous answer.

X Q. 39. You can not state that the ties furnished were any of the ties which you saw in the railroad?

A. I could not swear to it.

X Q. 40. Then of your own knowledge you do not know whether these ties photographed were taken from the main line of the road or a switch, do you?

A. As I answered before, I have every reason to believe that these are from the main line and from the same ties which I have
266 seen in the track although I did not myself see them taken from the track.

X Q. 41. Question repeated.

A. I have said, as I answered before, I saw ties like these in the track of the main line. I did not, however, see these same ties taken from the track.

X Q. 42. Then you don't know, of your own knowledge, whether they were taken from the track or not or what portion of the track they were taken from? I would like to have the question answered "yes" or "no."

A. I did not see them taken from the track but with them I received affidavits from the railroad officials stating the circumstances as shown in the photographs.

X Q. 43. You have told us that several times. What I want to know is whether you are prepared to admit under oath that you have no personal knowledge of where the ties came from?

A. I am not ready to admit that.

X Q. 44. Then you desire to state under oath that you do have personal knowledge as to where the ties came from?

A. I have already stated under oath that I did not see these ties taken from the track.

X Q. 45. And you desire to state, do you not, that you are not prepared to testify that you ever saw them in the track?

A. I could not swear that these are the same ties that I saw in the track.

X Q. 46. And you don't know whether the tie which showed the protection by a plate was in the same road or in the same part of the road or subject substantially to the same wear and tear or operation as the tie that is photographed as not being protected by tie-plate?

A. I depend upon the statements made me by the railroad officials.

267 X Q. 47. What did those affidavits state?

A. To the best of my memory, substantially as shown on these cards, they having been prepared by me personally from those affidavits.

X Q. 48. And so far as you can recall the affidavits, the affidavits did not add or state any information except that which is shown upon the two photographs?

A. In a general way that is the statement made by the railroad officials.

X Q. 49. And that was substantially all of the information as you recollect?

A. Yes.

X Q. 50. And these ties were procured and the photographs made and both ties and photographs used for the purpose of exhibiting the protective power of tie-plates in railroad construction and operation?

A. They were.

X Q. 51. And I fancy their exhibition was a very instructive lesson to the railroads of the protective influence of the plate, was it not?

A. Your fancy was more than realized.

X Q. 52. Who made the C. A. C. plate?

A. A steel company at or near Chester, Penn. I think the Tidewater was the name of the company.

X Q. 53. Could you in any way refresh your recollection and tell us the year they appeared?

A. Not to be very exact, but about the year 1892 or 1893.

X Q. 54. Did it have a flat or corrugated bottom or any projections on the bottom?

Witness requests and without objection is permitted to examine the "Complainant's Exhibit No. 21" to refresh his memory.

A. That is the C. A. C. plate as I remember it (designating
268 the page in "Complainant's Exhibit No. 21, lettered C. A. C. Claw and Shoulder Tie-Plate").

X Q. 55. This illustration refreshes your memory as to the construction of the C. A. C. tie-plate, does it?

A. In a general way.

X Q. 56. Is it your recollection that plates were made substantially in accordance with this illustration?

A. I could not tell you that from memory.

X Q. 57. It was first put upon the market by the Tidewater Company of Chester, Penn., as you recall?

A. No, sir, only manufactured by them.

X Q. 58. Who put it on the market?

A. A man by the name of Churchward.

X Q. 59. Of what place, if you recall?

A. An Englishman.

X Q. 60. Do you know what roads used it?

A. The Boston & Albany is the only one that I remember of using it to any extent.

X Q. 61. I understood you to say that it was not successful?

A. We only heard of it for a short time as a competitor.

X Q. 62. Well, do you know why it was taken off the market?

A. Natural death.

X Q. 63. Well, do you mean that it died because it wasn't satisfactory?

A. It might have been for that reason and it might have been for the lack of good blood.

X Q. 64. Then it might have failed either for mechanical or business reasons.

A. Yes.

X Q. 65. From the illustration here you would describe it as a tie-plate with bottom projections for engaging the tie, flat top surface, and flange shoulder, would you not?

269 A. The illustration shows it as such.

X Q. 66. And that would be your recollection of it?

A. Yes, sir.

X Q. 67. And the projections on the bottom are adapted to engage in the tie crosswise of the tie, are they not?

A. The illustration shows it so.

X Q. 68. And your recollection would harmonize with the illustration?

A. I can only depend on the illustration to refresh my recollection.

X Q. 69. Your idea is that it was taken off the market about 1893?

A. About that time.

X Q. 70. Do you know of its ever being on the market subsequent to that date?

A. I have only stated that it was about that date that I would think it was offered and that it was not on the market but for a short time.

X Q. 71. Well, aside from that period to which you have referred, do you remember of ever having seen any C. A. C. plate on the market?

A. I do not remember any more than I have answered in my previous answer.

X Q. 72. You ceased your connection with the manufacture of tie-plates about the year 1904?

A. As I remember it.

X Q. 73. And at that time the Q & C Company ceased to manufacture and sell tie-plates, did it not?

A. Yes, sir, or in any way become interested in tie-plates.

X Q. 74. And that it then transferred its business in tie-plates to the Railroad Supply Company?

A. It did.

X Q. 75. You have testified that between the Servis and
270 Wolhaupter types of tie-plates the Goldie type of tie-plate came on the market. Please describe this Goldie tie-plate.

A. It is what is called a claw-plate.

X Q. 76. That is, it had projections like claws from its lower surface?

A. Yes, sir, at the four corners.

X Q. 77. Was the top surface corrugated or flat?

A. Flat.

X Q. 78. Did it have a shoulder flange?

A. I think it was made with a shoulder, perhaps not all times.

X Q. 79. You spoke of making various styles or kinds of Servis tie-plates. Will you please tell us first what the Servis tie-plate was: that is, describe it, as originally made and then indicate any variations in its manufacture while you were making it?

A. It was originally made with two flanges on the bottom, they being at the outer edges of the plate. The types were afterwards varied by making a three-flange, also a four-flange plate and changing the location of the flanges and the depth and some of the minor details of the flanges.

X Q. 80. This alteration in the position and numbers of the flanges were mere variations in the type?

A. That is all.

X Q. 81. Was the Goldie tie-plate corrugated or flat on top?

A. Flat.

X Q. 82. Did it have a shoulder flange?

A. I have answered that before that it would be some with shoulders and some were made without.

X Q. 83. Was the Servis tie-plate with a shoulder flange or without?

—. ——.

271 X Q. 84. Then the Servis tie-plate was a shoulderless flat top tie-plate with claw projections on the bottom?

A. No, sir, the flanges on the bottom.

X Q. 85. And the Goldie tie-plate was a flat top tie-plate sometimes with and sometimes without shoulders and with claws on the bottom?

A. As before stated, I think the Goldie plate was made both with and without the shoulders but with claws on the bottom.

X Q. 86. In what way did the flanges on the bottom of the Servis tie-plate engage with the tie, crosswise or lengthwise?

A. Lengthwise of the tie.

X Q. 87. The Servis tie-plate was patented, was it not?

A. Yes, sir.

X Q. 88. And the Goldie tie-plate was patented, was it not?

A. I so understand.

X Q. 89. Was the C. A. C. tie-plate patented?

A. There was a patent obtained by Churchward for a tie-plate.

X Q. 90. Do you know whether this illustration of the C. A. C. tie-plate shown in "Exhibit 21" conforms to the structure shown in the patent?

A. I could not answer that.

X Q. 91. Do you know how it comes that the Railroad Supply Company announces itself as the manufacturer and seller of the C. A. C. tie-plate?

A. I do not remember.

X Q. 92. Was that arrangement perfected or were any C. A. C. tie-plates made by the Railroad Supply Company while you were connected with them?

A. I do not remember of any arrangement, but I am quite sure

that no C. A. C. tie-plates were made by my company during my connection with it.

272 X Q. 93. When was it that the Servis tie-plate was first put on the market?

A. About 1888.

X Q. 94. Did the Servis Company make it or procure it to be manufactured?

A. They procured it to be manufactured.

X Q. 95. Who actually manufactured the plate of the Servis type for the Servis Company?

A. It was first made, to the best of my knowledge, by the steel works at New Glasgow, Nova Scotia, and then they were manufactured for my company, the Q. & C. Company by the Troy Steel & Iron Company of Troy, N. Y., and afterwards by the Pennsylvania Steel & Iron Company, Steelton, Penn., and the Illinois Steel Company at Bay View, Wisconsin, and Joliet, Illinois.

X Q. 96. The Servis Company then was a selling and not a manufacturing company?

A. Yes, sir.

X Q. 97. Who manufactured the Goldie type of tie-plates at first?

A. Dilworth, Porter & Co., Ltd., Pittsburgh, Penn.

X Q. 98. Did they make for themselves or for other companies?

A. For themselves.

X Q. 99. The Dilworth, Porter & Co. are large manufacturers of tie-plates and have been for many years, have they not?

A. Since they commenced with the Goldie plate?

X Q. 100. And that was about when?

A. Early in the nineties.

X Q. 101. You spoke of being familiar with the Q. & W. plate. Can you describe it?

Witness requests that he look at drawing, which is permitted without objection.

273 A. That, designating the page in "Exhibit 21," marked the Q & W, is the Q & W plate.

X Q. 102. What do these initials Q & W stand for?

A. It was the name we chose for the plate.

X Q. 103. Why did you choose it?

A. We thought it was a good name to advertise it by.

X Q. 104. Who originated the plate?

Mr. Brown: Question is objected to as improper cross-examination.

A. I could not say.

X Q. 105. Who manufactured it?

A. Pennsylvania Steel Company at Steelton, Penn. and Illinois Steel Company at Joliet, Illinois.

X Q. 106. For what selling company?

A. It was sold both by the Q & C Company and the Railroad Supply Company.

X Q. 107. When was it first put upon the market?

A. I could not answer from my memory. I can not remember.

X Q. 108. Before you severed your connection with the Railroad Supply Company?

A. It was before that time.

X Q. 109. In the Q & W plate were the bottom flanges engaged with the tie crosswise or lengthwise?

A. Lengthwise.

X Q. 110. That would, of course, throw the top corrugations crosswise of the rail?

A. Yes, sir.

X Q. 111. Was this marketed before or after the Goldie type?

A. After.

X Q. 112. Before or after the Servis type?

A. After.

274 X Q. 113. Before or after the C. A. C. type?

A. After.

Cross-examination of the witness Quincy closed.

Redirect examination of the witness by Mr. Brown:

R. D. Q. 114. Do you recall the names of the officials who furnished you with the affidavits respecting the ties taken from the Santa Fe Road about which you have testified?

A. I do not.

R. D. Q. 115. Do you remember the names of the persons who executed the affidavits?

A. I do not.

R. D. Q. 116. Was there more than one affidavit?

A. I do not remember.

R. D. Q. 117. And what will the initials C. A. C. stand for?

A. They were three men, one was Churchward, one was Alexander, and the other I do not remember.

Redirect examination closed.

Examination of the witness Quincy closed.

CHARLES F. QUINCY.

275 And thereupon BENJAMIN WOLHAUPTER, a witness produced on behalf of the complainant, having been first duly cautioned and sworn, upon oath, testifies as follows in answer to interrogatories by Mr. Brown:

Q. 1. Please state your name, age, residence and occupation?

A. Benjamin Wolhaupter, 49 years, New Rochelle, N. Y., civil engineer.

Q. 2. Where is your place of business and with what concern are you connected in business?

A. Twenty-nine West 34th street, New York City, The Rail Joint Company.

Q. 3. Were you ever in the tie-plate business and if so when and for how long a time?

A. Yes, from 1895 to 1898 and from 1902 to 1905.

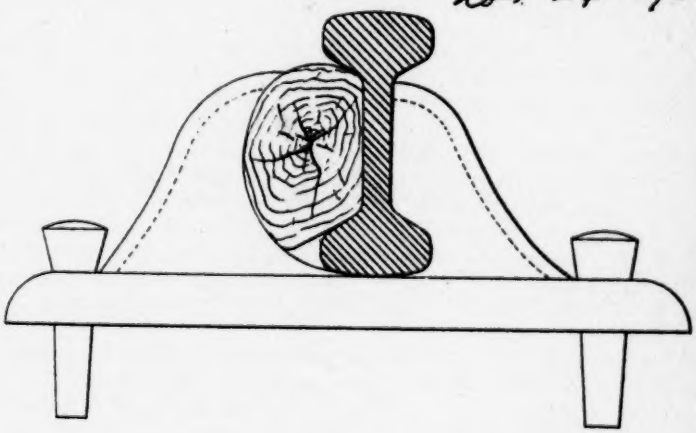
(No Model.) 3 Sheets—Sheet 3

J. K. THOMPSON & G. R. RACE.

RAILWAY RAIL CHAIR.

No. 305,864 Patented Sept. 30, 1884.

Complainants Cross Ex No 2
Rail Chair Patent—
Kate S. Holmes
Fig. 3. Notary Public
Nov. 24-1908



Witnesses

Eugene V. Brown,
James Young.

Inventors

J. K. Thompson,
G. R. Race

By Attys
Baldwin, Hopkins & Peyton

Q. 4. At what place were you located in the tie-plate business at the times mentioned and with what concerns?

A. From 1895 to 1898 with The Railroad Supply Company. And 1902 to 1905 with the Federal and afterwards Independent Railroad Supply Company, all at Chicago, Illinois.

Q. 5. In what capacity were you associated or employed by the companies mentioned in your last answer?

A. The Railroad Supply Company I was manager and with the Federal and Independent Railroad Supply Company I was also manager and secretary.

Q. 6. Are you the same Benjamin Wolhaupter to whom was issued letters-patent of the United States No. 538,809, No. 691,332 and No. 721,644, copies of which are in evidence in this case as "Complainant's Exhibits Nos. 1, 2 and 3"?

A. I am.

Q. 7. Are you employed by The Railroad Supply Com-
276 pany or do you own any stock in or have any other financial interest in that company at the present time?

A. I am employed by that company and also own stock in said company.

[NOTE.—See Q. 47.]

Q. 8. During the time that you were actively engaged in the tie-plate business, and prior to that time, what experience did you have in the actual manufacture and sale of tie-plates, if any, and in the inspection of track conditions and the work of installing and using tie-plates and kindred matters relating to or connected with the manufacture and sale of tie-plates?

A. While with The Railroad Supply Company I had entire charge of the manufacture and sale of tie-plates and personally attended to many applications of plates and the sale of same together with the details of manufacture. While with the Federal or Independent Railroad Supply Company all of this work was individually done by myself, that is, the details and supervision of the manufacture, the actual sales and inspection of track conditions and the work of installing tie-plates.

Q. 9. Did you have any opportunity to acquaint yourself with the tie-plate business prior to your associating yourself in business with The Railroad Supply Company?

A. Before becoming associated with The Railroad Supply Company I was office engineer with the Grand Trunk Railroad and the Chicago and Northern Pacific Railroad and Assistant Engineer of a portion of the Grand Trunk Railroad System and the maintenance and supervision of track was in charge of our department on the Grand Trunk.

Q. 10. And did the employment referred to in your last answer give you the opportunity of becoming acquainted with railroad devices generally and particularly those relating to what might

A. Without.

(Here follows diagram marked pages 277 and 278.)

279 be called the maintenance of way department and used in the track?

Mr. Cooke: Objected to as leading.

A. While with the Grand Trunk Company latterly all of my work consisted of matters relating to track, and while with both roads my work was largely connected with track and track devices.

Q. 11. Please tell us what is a tie-plate and what are its uses?

Mr. Cooke: Objected to as immaterial, irrelevant and incompetent.

A. To thoroughly answer that question and properly answer it it would be necessary for me to describe the partial evolution of track conditions. In the earlier days of railroading, the rails were made small and light on account of the rolling mills of those days being able to make only rails of light weight and small. Some of the first rails were made of strap iron. These were too light for the traffic and later the mills, in increasing practice and experience, began to roll rails of a heavier section but still of crude form and in many cases they were of a shape which was such that they could not be directly supported and held in a vertical position except through special devices formed to carry them and support them above the tie. These devices were usually of cast material and formed seats, or what were then commonly called chairs. These chairs were placed on every tie including the joint ties.

As the makers of rails became more expert in the rolling of the same they were enabled to form the same with flat bases or seats so that these seats could be placed directly on top of the ties and thus the chairs were dispensed with except at the ends of the rails.

Still later when the steel rail was used and the rolling mills had become expert in rolling difficult sections, the chairs at the
280 ends of the rails were dispensed with and the ends of the rails were fastened together with straps or fishing plates.

In the use of the chairs at the ends of the rails it was discovered that the joint ties under these chairs were battered out and worn much more quickly than the other ties and it was for this reason largely that they were abandoned and means found for connecting the ends of the rails with fish-straps.

Referring to the ties commonly used in this country it was soon discovered that the best all around tie was of white oak and whose average life was limited by decay to about eight years; and gradually the roads in this country came to use the white oak tie almost universally. It formed a strong and firm seat for the rail and also a substantial and solid surrounding medium for the spike.

The use of oak ties became so extensive that they became scarce and the price increased rapidly making it very difficult in many cases for roads to obtain supplies. It was at this time that the tie-plate made its appearance. The tie-plate was primarily designed to form a metallic surface for ties of softer wood than oak, notably such woods as cedar, tamarack, pine, spruce, redwood, &c., immediately under the base of the rail.

It was found in the use of these soft woods for ties that the life

was limited by the abrading and crushing action of the rail and not by decay, and a number of these woods had a longer natural life in the ballast or track than the white oak, notably the white cedar whose average life was twelve years provided it was preserved from the aforesaid abrading or cutting action of the rails.

Furthermore, these ties, being of soft material, did not form so substantial a surrounding medium for the spike as the oak and consequently the track would widen gu*a*ge more readily with
281 their use than with the white oak. In the use of soft ties without tie-plates, the common practice was to renew part of the ties in the track from year to year, leaving the other ties in track partially worn, some greater than others, according to the time they had been in track. This left the tie supports for the rail of unequal heights and of unequal supporting ability, made a very uneven track and a dangerous track for high speed and heavy trains.

The tie-plate changed all this. By the use of it the life of the tie in track was extended to its natural life of decay which, for instance, in connection with the cedar tie was twelve years as compared with the eight years of the oak tie. The tie-plate formed an even bearing surface and supporting surface on all of the ties whether recently put in or whether they had been in one or several years. Furthermore, with the oak tie and no tie-plate, it was the one single outside spike on each tie which prevented lateral movement of the rail and the widening of the gu*a*ge of the track, whereas by the use of the tie-plate both the inside and outside spikes on each tie, passing through the plate, were tied together by the plate so that both spikes resisted the outward movement of the rail and doubled the resistance to lateral movement of the single spike without a tie-plate.

The early plates were made to become part and parcel of the tie as nearly as possible so that there is no movement between the plate and the tie but only movement between the rail and the plate; and in this respect they radically differed from the old style of chairs which were fastened to the rails and moved, largely, up and down with them. In other words, the tie-plate was designed to be a metallic surface for the wooden tie immediately beneath the rail.

282 As an illustration of the effectiveness of tie-plates, it may be stated that on mountain railroads, having heavy grades and sharp curvature, where rail braces had been used extensively to prevent the track from widening or overturning were abandoned and tie-plates used in their place. Said tie-plates were more satisfactory, safer, more economical and much better than the rail brace.

Summarizing the above it may be stated that the tie-plate is used to preserve the tie, to maintain the gu*a*ge, to maintain the surface and to maintain the vertical position of the rail and today were it not for the tie-plates the traffic on American railroads could not be maintained.

Q. 12. I show you an illustration marked "Complainant's Exhibit No. 29" and ask you to state what it is?

Mr. Cooke: Objection repeated.

A. The upper portion marked "normal track" shows the side elevation of a railroad rail as commonly laid on a wooden tie without a tie-plate. The lower illustration marked "track under passing load" shows the same rail when a car or engine wheel passes over it. The load from the wheel of the car depresses the rail and tie into the ballast. The compressibility of the ballast and tie allowing the rail to drop somewhat below its normal level, and the said track comes back to its normal position after said load has passed.

Q. 13. What is the result of such vertical motion or movement of the rail under the passing load where the track is laid directly on the ties without tie-plates? I mean as to the tie.

Mr. Cooke: Same objection.

A. Well if the ties are hardwood and not of great age there is but little effect except that in this diagram marked "Track Under
283 Passing Load" it hardly shows all of the conditions which take place. Where the wheels rest on the rail between two ties the rail is bowed or deflected under the wheel with the result that the rail some distance ahead and in rear of the wheel is raised slightly off the tie on account of the bowing or bending action produced by the wheel. As this rail is raised off the tie the space beneath the rail necessarily is occupied with air and when the wheel travels very rapidly naturally the upward movement of the rail off the tie is exceedingly rapid, necessitating the air to rush in under the rail and on top of the tie with great swiftness pulling in particles of sand and dust stirred up out of the ballast by passing trains. These particles of sand and dust become lodged on the surface of the tie immediately beneath the rail base and form the most destructive agent in cutting or abrading the wood fibre supporting the rail.

Where the rails rest on soft wood ties this action takes place also but in addition there is a tendency for the rail when dropping again on to the tie to shear or cut fibres of the tie at each edge of the rail.

Q. 14. Have you in your personal experience observed ties in place in track where the rail is rested directly on the tie which ties have been cut or abraded in their upper surface beneath where the rail rests?

Mr. Cooke: Same objection, and as obvious.

A. Yes.

Q. 15. Please look at "Complainant's Exhibits Nos. 28, 34, 35, 36 and 32 and 33" and state if you know what these illustrations represent and state whether or not you have seen ties cut in the manner illustrated therein?

Mr. Cooke: Same objections as to being immaterial.

A. Yes. I have except "Exhibit No. 33" does not show a tie that is cut.

284 Q. 16. Please state and explain what each represents?

Mr. Cooke: Same objections.

A. "Exhibit No. 28" is I believe a portion of a white cedar tie

which I had taken out of track and which exhibits the abrading action of the rail on a cedar tie not having a tie-plate. "Exhibit No. 33" I believe is a soft wood tie and I judge shows cutting of the rail on said tie where no tie-plate is used. I believe I had nothing to do with the securing of this exhibit. "Exhibit No. 35" I will answer similarly. "Exhibit No. 36" the same.

"Exhibit No. 32" represents one end of a railroad tie that I, as manager of The Railroad Supply Company, secured in California and had sent to The Railroad Supply Company in Chicago for the purpose of testing the action of rails on railroad ties. I supervised the placing of this tie in track for the Chicago Terminal Railroad placing the rail on one end of the tie without a tie-plate. "Exhibit No. 33" the other end of the redwood tie shown in "Exhibit No. 32," but having thereon one of the early rollings of the Wolhaupter tie-plate. This plate was placed on the tie at the same time that the rail was placed on the other end of the tie shown in "Exhibit No. 32." The opposite or corresponding rail to that shown in "Exhibit No. 32" was placed on the tie-plate the two ends of the tie being given as nearly as possible the same conditions of support, spikings, &c. This test was made with the object in view of proving to me and the other members of The Railroad Supply Company the effect that a tie-plate would have in preserving a redwood tie.

Q. 17. About when was the test that you speak of in your last answer made?

Mr. Cooke: Same objections.

A. I judge some time in the year [illegible].

285 Q. 18. How long was that redwood tie subjected to the test?

A. Fourteen months.

Q. 19. Was the track in which this test was made a main line or a switch or branch line if you remember?

A. It was either a main track or track adjacent to the main track which had a corresponding amount of traffic over it as the main track.

Q. 20. Please look at the illustrations marked "Exhibits Nos. 38, 39 and 40" and state what they represent?

A. "Exhibit No. 38" apparently represents a tie supporting a rail, said rail being secured to the tie by two spikes. The rail supports a wheel. The arrows A, B and C apparently indicate as follows: A represents the vertical load applied to the rail by the wheel and represents the load the wheel carries. B apparently represents the lateral thrust of the flange of the wheel against the side of the head of the rail on a sharp curve. C represents the direction the force will take which is produced by the two forces represented by A and B showing that the resultant force of load is applied to the tie at or near the outer edge of the rail flange. As a result of the application of these loads being applied at this particular point on the tie, the tie is subjected to a greater pressure at the edge of the outer flange of the rail than at the edge of the inner flange of the rail.

This action takes place more or less on tangents on both rails on curves on the outer rail but not usually on the inner rail of a curve.

"Exhibit No. 39" shows apparently a tie without a tie-plate and supporting a rail, one edge of the rail having apparently cut into the tie at A^1 B^1 greater than at A B. This illustrates the manner in which rails commonly cut into ties explained in connection
286 with "Exhibit No. 38" where no tie-plates are used. "Exhibit No. 40" apparently represents a tie supporting a rail, the rail being held to the tie by two spikes, the rail supports a wheel and the arrow heads A, B and C apparently indicate the two direct forces applied to the rail and the resultant force applied to the tie and shows the outer spike apparently having been moved outwardly as a result of the lateral thrust produced by the flange of the wheel as shown in the arrow marked B. This apparently shows the rail moved outwardly thus leaving the track ga-ge wide, and this is the action which commonly takes place in soft wood ties as explained in connection with "Exhibit No. 38."

Q. 21. What is meant by the expression rail canting?

Mr. Cooke: Same objection.

A. Where the up and down center line of the rail takes a position out of the vertical.

Q. 22. What is spike wear or throat cutting of spikes and how is it produced ordinarily?

Mr. Cooke: Objection repeated.

A. The throat of the spike is that part of the spike immediately under its head on the side adjacent to the rail. Throat cutting is commonly produced by the abrading action of the rail in its rise and fall on the tie as explained before through the bowing or bending of the rail by wheel loads applied to the rail at a point nearby.

Q. 23. Does this action of throat cutting occur when the rail is laid directly on the tie without a tie-plate or when the rail is laid on a tie-plate?

Mr. Cooke: Same objection.

A. It will occur under both conditions with and without tie-plates though many times it will not occur with a tie-plate when it
287 will occur where no tie-plate is used in the same locality and under the same conditions. The throat cutting of spikes is very largely reduced by the use of tie-plates and in many cases entirely eliminated.

I should have added to my previous answer to Q. 22 and it is also produced and increased by the abrading action of the rail in its lateral or side movement under the action of passing wheels. The greater the side or lateral movement of the rail the more rapid and severe is the throat cutting.

Q. 24. Will you please tell us what tie-plates were on the market at or about the time you or The Railroad Supply Company put out your first Wolhaupter tie-plate?

Mr. Cooke: Objection repeated and further that it has not been shown that the witness has been qualified to answer such a question.

Mr. Brown: Question withdrawn.

Q. 25. Do you know what tie-plates were on the market at the time you or The Railroad Supply Company put out the first Wolhaupter tie-plate and how do you know, if you do?

Mr. Cooke: Objection repeated.

A. I do and I know through the competition we had and the presentation of these plates to the various railroads that we were endeavoring to sell the Wolhaupter patent to.

Q. 26. What plates were on the market at the time you brought out the first Wolhaupter tie-plate?

Mr. Cooke: Objected to as immaterial.

A. The early forms of the Servis tie-plate, the early forms of the Goldie tie-plate, the C. A. C. plate and the Fox plate; if the Fox plate was not on the market when we first put out the Wolhaupter plate it was immediately thereafter.

288 Q. 27. Describe please the early form of the Servis plate?

Mr. Cooke: Same objection.

A. There were two or possibly three forms. The first was a thin piece of sheet metal with the two side edges turned down, said edges being sharpened in a neighborhood to enter the tie. It was smooth and flat on top, had two spike holes, was about 3¾ inches wide and of a length to suit the width of the base of the rail. The second was also a thin piece of metal similar to the one above described, had the two side edges turned down, had a small central under flange parallel with the two side edges which flange also entered the wood of the tie. It was about five inches wide and of a length to suit the width of the base of the rail, and it had two or more spike holes.

There was a third which was being tried experimentally. It was of thin material and its side edges turned down like the two first described plates. It had two small under flanges and a rib on the center of the top. Said rib was partly punched out of a width equal to the width of the rail base, the rail base fitting in said space. It had two or more spike holes. Another might be added which was exactly similar to the second one described except that it was wider. The main and chief and commercial plate was the second one having the smooth top, five inches wide, two side flanges and one center one.

Q. 28. With the smooth top Servis tie-plate was there any plate wear due to the movement of the rail on that plate in connection with sand or other gritty substances, if you know?

Mr. Cooke: Same objection and as leading.

A. There was.

289 Q. 29. Please look at "Complainant's Exhibit No. 48," and state if you can identify the illustration therein shown and if so tell us about it?

A. When we first introduced the Wolhaupter tie-plate our endeavor was to make a better plate than our competitors, and as the Wolhaupter plate was of the same general type as the Servis, namely, having flanges which entered the tie parallel with the grain of the tie, we of course sought in every way to prove to the railroads that the Wolhaupter plate is a better and more economical plate for them to buy. We found in the first place that the Servis plate was being rapidly worn by the action of the sand which accumulated on top of the plate and underneath the rail. Said sand serving as an abradant which rapidly reduced the plate in thickness and in strength with the result that the Servis plates soon buckled or turned up the edges of the rails. The outer edge naturally turning up first on account of the greater loads that were applied to it as described in "Exhibit No. 38."

To overcome this objection the Wolhaupter plate was originally designed of a corrugated form so as to give the greatest amount of strength with the least amount of material and with grooves on the top surface so as to relieve the top surface as far as possible of the abradant in the form of sand and grit by placing grooves for said abradant to fall into.

To prove to the railroads that this form of plate was better than the Servis in that it would wear longer, was stronger, we in many cases donated Wolhaupter plates to be tested by the railroad officials in connection with Servis plates and in the "Exhibit No. 48" herewith is shown the result of one of such tests where the Servis plate under the base of the rail is practically worn through, while the Wolhaupter plate on the top surface is very little worn not-
290 withstanding the fact that the top surface of the Wolhaupter plate supporting the rail is only about a third or a quarter of the area of the top surface of the Servis plate supporting the rail. As a result of these tests the Wolhaupter plate having the grooves practically drove out of use the flat top Servis plate and other plates of a similar character.

Q. 30. Tell us if you please the construction of the earlier forms of Goldie plate that you say were on the market when you brought out the Wolhaupter tie-plate?

A. The Goldie plate was a different type from the Wolhaupter and Servis plates in that the flanges or claws of the Goldie plate passed into the tie across the grain of the tie and the Servis and Wolhaupter plates with their flanges passing into the tie parallel with the grain of the tie. In one form of the Goldie plate there was one chiseled shape claw at each of the four corners of the plate. These claws entered the wood of the tie and were intended to hold the plate against lateral movement. The plate itself was practically of flat formation with a shoulder formed on top on one side against which the outer flange of the rail abutted. The plate itself being of a much heavier form and thickness than the Servis or Wolhaupter plates. In the second form of Goldie plate, only a few of which were used—I wish to continue to refer to the first form.

This first form was the early predecessor of the present form of Goldie claw plate the weaknesses of the original plate being elimi-

nated and the present form developed. I have just called this the first form and in the beginning of the answer to Q. 30 I spoke of it as one form of Goldie plate. This one form of Goldie plate from which the present Goldie claw plate has developed was not I believe his first form of plate. In his first form of plate, as I recall it, he had practically a plain flat top plate with shoulder running
291 along on top near one side against which the outer flange of the rail abutted and beneath the plate two small slight projections running across in the same direction as the shoulder above. This plate was abandoned at a very early date not proving satisfactory and his later or claw form was adopted in its stead.

Recess.

Q. 31. Please state the construction of the Fox tie-plate and as near as you can the date when it came on the market?

A. The Fox tie-plate was made of a very thin piece of flat sheet metal. It had two somewhat triangular shaped flanges punched out of its central portion and turned down. These were short occupying about two-fifths of the length of the plate each. Towards one end a small piece of metal was pressed up to form an abutment for the outer flange of the rail. It was put on the market I believe shortly after and not before the Wolhaupter plate was brought out. The only extensive sales of this plate were made about eighteen months to two years after the Wolhaupter plate was put on the market. The Fox plate as distinguished from the Wolhaupter and Servis plates was made after the metal was rolled and had become cold and these various projections were forced into the cold metal. The Wolhaupter and Servis plates were made in their particular form in the rolls of the mill and while the metal was still hot.

Q. 32. You may state if you please if there was any difficulty with or objection to types of tie-plates that were on the market prior to the bringing out of your Wolhaupter tie-plate and describe what these difficulties were?

Mr. Cooke: Objected to as leading.

A. Servis tie-plate. As explained before in describing this
292 plate the main objection to it was that it was rapidly worn out by the grinding action of the sand under the rail and it was not sufficiently strong after being so worn to distribute the loads from the edge of the rail flanges out to the extreme limits of the plate.

Fox tie-plate: This tie-plate was so thin and had such little strength furnished by the flanges and it wore out with sand so rapidly that it was very shortly abandoned.

Goldie tie-plate: Shoulder and two ribs below. This plate had no strengthening flanges to distribute the loads to the extreme limits of the plate and especially it had no means for the plate in itself becoming secure to the tie and therefore part of the tie, that the plate rose and fell under the action of the rising and falling of the rail, battered and bruised the fibre of the wood beneath the plate, sucked in water and moisture beneath the plate and destroyed

the fibres of the wood beneath the plate and for want of proper strength it curled and bent up at the outside of the rail flanges.

Goldie tie-plate, chiseled claws: This plate was designed with claws to overcome the objection in the aforementioned Goldie plate so that the claws would bind themselves to the wood of the tie and thus make the plate part and parcel of the tie preventing it from rising and falling under the rise and fall of the rail. These claws being at the extreme corners of the plate and cutting the fibre of the tie across the grain allowed the end fibres of the wood beyond the chiseled points to rise up thus allowing the plate to become loose and the moisture and water to penetrate and destroy the tie. This plate was later improved upon by the present form of Goldie tie-plate in which the claws are placed towards the center of the plate and not at the extreme outer corners. Consequently the
293 fibre of the wood which was cut by the claws is held down and in place by the overhanging portion of the plate beyond the claws thus partially preventing the entering of water and moisture from entering the end fibres of the wood which are cut by the claws.

Q. 33. And which of these tie-plates was your principal competitor in the market at that time?

A. The Servis.

Q. 34. State generally what tie-plates other than the Wolhaupter have come on to the market since you first introduced your Wolhaupter tie-plate?

A. The Q. & W., Goldie Improved, the Glendon, the Sellers (two types), the Chicago, Wolhaupter shoulder, the Hart, the Economy and of late there may have been one or two other forms or makes slightly differing from these of which I am not particularly familiar.

Q. 35. Please look at "Complainant's Exhibit No. 18" and state, if you know, who designed the plate shown therein and about when?

A. I personally designed this plate, made the drawings of it, had the model made and some aluminum castings made from the model of full size, very early in May, 1904.

Q. 36. Were any plates rolled of that particular pattern or section?

A. Not to my knowledge.

Q. 37. What became of those aluminum plates, if you know?

A. I believe one or more was delivered to the Santa Fe Railroad and the others later on to The Railroad Supply Company.

Q. 37. Were the grooves in the top of that plate designed to be parallel with or across the rail?

Mr. Cooke: Objected to for the reason that the exhibit shows for itself.

294 A. To be parallel with the longitudinal axis of the rail.

Q. 38. Were the grooves in the top of the Wolhaupter plates at first arranged to run across the base of the rail or parallel with the base of the rail when in use?

A. Do you mean by Wolhaupter plate the plate commonly known

on the market as the Wolhaupter plates or all the plates that I have designed and had patented?

Q. 39. I meant to use the word Wolhaupter generally and not as a trade-mark or trade-name. I will now withdraw the question and give it in another form as follows: Were the first plates that you put on the market provided with grooves on the upper surface and if so in what direction did the grooves extend?

A. The first plates that I put on the market had grooves on top of the plate and extended when in use across the longitudinal axis of the rail.

Q. 40. And how long did you continue to roll the plates with the grooves in the top surface so arranged?

A. Up to the time I left The Railroad Supply Company.

Q. 41. And when were your first plates designed which had the grooves in the top surface arranged to extend parallel with the longitudinal axis of the rail?

A. In the use of the Wolhaupter tie-plate with grooves running across the longitudinal axis of the rail which were designed to prevent sand wear, it was found after extended service that while they prevented sand wear by the catching and holding of the sand, that they also caught and held and drained towards the center of the plate the brine which dropped from refrigerator cars that on some roads were extensively hauled. The said brine tended to rapidly eat up the plate beneath the rail to such an extent that some of the roads abandoned that type of plate for a flat smooth top plate without grooves to prevent this action of the brine beneath the rail.

295 To overcome this objection and to make a plate in which the grooves beneath the rail were prevented or would be prevented from carrying the brine under the rail base the plate was designed in which the grooves beneath the rail base for preventing sand wear were covered on their ends by the rail itself so that such brine would not drop into them and run beneath the rail causing the destruction of the plate. This type of plate it was intended to cover in letters-patent No. 721,644 of February 24, 1903. The design of these grooves running parallel with the axis of the rail was made sometime prior to March 31, 1902.

Q. 42. Please look at "Complainant's Exhibit No. 13" and state, if you know, who designed that plate and when?

A. I designed that plate in the spring of 1904, early in May I believe.

Q. 43. In Q. 7 I asked you are you employed by The Railroad Supply Company or do you own any stock in it, or have any other financial interest in that Company at the present time, to which you replied, "I am employed by that Company and also own stock in that Company." I ask you whether or not you desire to make any change or modification of your answer as thus given?

Mr. Cooke: Objected to as having been already answered and the answer is very plain and speaks for itself.

A. When that question was read to me I conceived that it was The Rail Joint Company I was being asked about and do not now under-

stand why I did not grasp that fact. I am not employed by The Railroad Supply Company and do not own stock in said Company, but I am employed by The Rail Joint Company and do own stock in that Company.

296 And thereupon an adjournment was taken to Thursday, July 1, 1909 at 9 o'clock in the forenoon.

G. R. WILKINS,
Notary Public.

MANHATTAN, LONG ISLAND, July 1, 1909.

Met pursuant to adjournment.
Present: Counsel as before.
Direct-examination of the witness Wolhaupter closed.

Cross-examination of the witness by Mr. Reed:

X Q. 44. When did you first turn your attention to tie-plates especially?

A. About 1892 and 1893.

X Q. 45. In what connection?

A. In connection with my engineering knowledge and my desire to keep in touch with all the advances and changes that were being made in engineering work.

X Q. 46. Were you then a manufacturer of tie-plates or connected with the manufacture and sale of them?

A. I was not.

X Q. 47. At this time had you any idea of becoming a manufacturer or inventor in the tie-plate line?

A. As explained in my direct testimony I had been up to that time in charge of track and was much interested in the improvement of track conditions and I had already invented and believe that at that time the patent had issued, a track device called a metal surface cattle guard. In fact I now recall that in 1891 and 1892 I was manufacturing cattle guards and selling same and following closely all the developments, and improvements in connection with track devices especially and my first knowledge of the tie-
297 plate as I now recall was earlier than I formerly stated. It was about 1890 and 1891. In the development of the surface cattle guard I came into close contact with track conditions and was on the lookout for other devices which were used in track.

X Q. 48. When was it that you first conceived the idea of engaging in the manufacture or sale of tie-plates?

A. The end of 1893 or early 1894.

X Q. 49. Prior to that time your interest in tie-plates had been that of an engineer keeping close tab on railway construction or rather track construction, had it not?

A. Yes.

X Q. 50. When was it that you first took up tie-plates with the idea of modifying or improving upon the then conditions of tie-plates?

A. The end of 1893 or early 1894.

X Q. 51. Prior to that time with what specific tie-plate devices were you acquainted?

A. The Service and Goldie.

X Q. 52. Had you seen those plates in actual position in railway tracks prior to this date of when you began to conceive the idea of improving or inventing?

A. I cannot say positively but I believe I saw them on ties which had been in track and which had been taken out of track.

X Q. 53. And you examined them to see the effect which track usage had had upon them, I mean the effect of using these two tie-plates in the track on the tie-plates themselves?

A. I cannot recall now exactly as tie-plates were very little used in those days. They were only then being introduced, but
298 somewhat later on I of course noticed the effect of the use of the plates on ties and of the behavior of the rail towards the plate.

X Q. 54. In what railroads did you understand these Servis and Goldie tie-plates that you saw to have been used?

A. At this time neither of them were very extensively used as they were being introduced and it was found that it was very difficult to introduce them on account of prejudices of railroad engineers and the additional first cost to the railroad.

Mr. Reed: Answer objected to and motion to strike out as not responsive.

X Q. 55. I asked you on what railroads you understood these tie-plates that you saw had been used?

A. As near as I can recall I believe the Servis was being used to some extent on the Southern Pacific Railroad, and the Goldie was being tested on the Pennsylvania Railroad. This was an experimental period with tie-plates and it is difficult to say what roads were buying and using them, for the actual purpose of preserving their ties or for the actual purpose of making tests and trials of the same. At this time a great many plates were distributed among the different roads gratuitously by the manufacturers and altogether it was an experimental period. I believe the Rock Island Railroad in these days were one of the early users of the Servis plate.

X Q. 56. Who made the Servis plate in this period?

A. Albany Iron and Steel Company, Troy, New York.

X Q. 57. For what establishment or concern did they make it?

A. For the Servis Tie-Plate Company.

X Q. 58. Who succeeded the Servis Tie-Plate Company in the sale of the Servis tie-plate?

299 A. I do not think that the Servis Tie-Plate Company ever sold tie-plates, at least not to my knowledge, but they had some agreement or arrangement whereby the Q. & C. Company sold them.

X Q. 59. Was this Servis tie-plate which you saw at this period of the style described by you as the first Servis plate?

A. Yes, that is the style described as the first and some of the others.

X Q. 60. In this period before you took up the tie-plate construc-

tion with the idea of modifying the then styles did you familiarize yourself with the literature on the subject?

A. I did.

X Q. 61. Did you examine the letters-patent or any letters-patent that had issued on tie-plates or specifications or descriptions of letters-patent?

A. I don't remember having done so, in fact I am satisfied that I did not until about the time I applied for my first patent.

X Q. 62. What form of Goldie tie-plate was used in this first period that you told of?

A. My recollection now is they were the two first forms that I described.

X Q. 63. When in 1893 or 1894 you took up the tie-plate subject and the idea of modifying the then types or styles did you examine further into literature of the subject and make any investigation as to letters-patent or specifications of letters-patent and if you did what was this examination?

A. From time to time as pamphlets of the manufacturers issued I naturally read them and noted and examined a great many copies of patents that were cited against my applications.

X Q. 64. Well, did you examine any specifications of
300 letters-patent prior to the time that you made your application?

A. No.

X Q. 65. When did you first become acquainted with the Fox type of tie-plate?

A. I think about the spring or summer of 1895.

X Q. 66. Who was then manufacturing or selling them?

A. The Fox plate.

X Q. 67. Yes.

A. I don't now recall the name, but I believe it was a firm of two brothers who had a factory somewheres in the neighborhood of Cleveland or on the southern shore of Lake Erie and who manufactured all classes of stamped goods from sheet steel. I now remember the name of the firm was the Avery Brothers.

X Q. 68. And in what roads were they used, I mean the Fox type?

A. They were being distributed about to a great many roads, just which ones I cannot now say or recall.

X Q. 69. This Fox tie-plate was subsequently used upon some railroads was it not?

A. To some slight extent I believe.

X Q. 70. What roads were they that used the Fox tie-plate to any extent aside from experimental?

A. The only road that I now recall having purchased a good many of them was the Santa Fe and I believe this was in the spring of 1897, but I believe they were unsatisfactory and the Santa Fe was at that time purchasing some of the Wolhaupter arch and girder plates which turned out to be more satisfactory to them and which they used extensively.

X Q. 71. By the Wolhaupter arch and girder tie-plates do you

mean the form shown in the drawings of your letters-patent 538,809, "Complainant's Exhibit No. 1"?

301 A. Yes, or I would rather illustrate it as the plate shown in "Complainant's Exhibit No. 33."

X Q. 72. From what source did you understand that the Fox tie-plate was unsatisfactory to the Santa Fe?

A. In the punching of tie-plates it is necessary to give the spike holes what is called a stagger, that is, to put them in a position so that they will not be in line with one another on the tie. This stagger on the tie-plate placed on one end of the tie must be reversed on the tie-plate which is placed on the opposite end of the tie in order that the ties will not skew or rather in order to prevent the ties from skewing or taking a position across the track other than at right angles. In the early days of the manufacture of tie-plates and at the time you are now referring to all tie-plates were made in that manner and the first large order of Fox plates supplied to the Santa Fe, this stagger for the spikes was all in one direction so that these plates were good for only one end of the tie which made them objectionable to the road and caused considerable trouble for the track men. Furthermore the plate was subject to bending, they curled up readily and in the opinion of track men were more of a makeshift than a good practical device.

Mr. Reed: Answer objected to and motion to strike it out as not responsive.

X Q. 73. I asked you from what source you understood that the Fox plate was unsatisfactory?

A. I did not quite conceive what your question was. In selling goods for track purposes and to railroads the seller is in the habit of obtaining all the information possible regarding the behavior of his own and competitor's goods. This information is obtained through his salesmen and inspectors and is obtained from, in the case of tie-plates, the section men, section foremen, supervisors, engi-

302 neers, superintendents and other officials up to the top. It was in this way that the information came to me regarding the Fox tie-plate but chiefly through my own observation and conversation with track men and supervisors who had them in use.

X Q. 74. From what persons connected with the Santa Fe Road did you learn that the Fox tie-plate was unsatisfactory? I would like to have you give us their names?

A. I do not recall any one in particular.

X Q. 75. Can you state that any person connected with the Santa Fe Road ever told you that the Fox tie-plate was unsatisfactory, if so, I would like to have what he said and what his position was on the road?

A. I do not recall any particular individual at this time belonging to the Santa Fe but do know that the Santa Fe discontinued using them.

X Q. 76. That to your mind is conclusive proof that the Fox tie-plates were unsatisfactory, is it?

A. Not entirely, while I cannot name any specific individual on

the Santa Fe who said they were unsatisfactory I do know that some of their track men considered them unsatisfactory and do know that afterwards they ceased buying this plate, and I do know from my own knowledge and experience of track that they were an unsatisfactory plate.

X Q. 77. What part of the Santa Fe track did you see the Fox plate on?

A. I do not recall ever having seen the Fox tie-plate on the Santa Fe track.

X Q. 78. From what part of the Santa Fe track did you understand that the Fox tie-plates that you saw and which were unsatisfactory were taken?

A. I do not now recall, Mr. Reed, that I saw any Fox tie-plates which came out of the Santa Fe track.

X Q. 79. Prior to the use of the Fox tie-plate on the Santa
303 Fe System that System had used the Wolhaupter type as shown in "Exhibit 33" I understand?

A. It was about the time the Fox plate was purchased by the Santa Fe that the Santa Fe began to purchase the Wolhaupter plates as shown in "Exhibit No. 33." They were also purchasing at this time, and had been purchasing most extensively, the Servis tie-plate.

X Q. 80. How long did the Santa Fe continue to use tie-plates of the Wolhaupter type shown in "Exhibit 33"?

A. Up to the Spring of 1904.

X Q. 81. Were they during this period also using other tie-plates than the Wolhaupter "Exhibit No. 33" style?

A. The Servis and Fox plates which had been formerly purchased were still being used where they had not been destroyed and I understood that they had tried a few experimental plates of other types in the earlier days of tie-plate manufacture.

X Q. 82. In the Fox tie-plate the difficulty about the spike holes could have been very easily remedied, could it not, by changing them so that they would be out of alignment?

Mr. Brown: Objected to as immaterial.

A. The spike holes on the Fox plate which were furnished were out of alignment and staggered in one direction so that they could be used on one end of the tie but these plates could not be repunched so as to obtain spike stagger in the opposite direction, on the other end of the tie because the flanges of the Fox plate were struck from the plate at or near the points where these new spike holes would have to be placed and the only way of rectifying the matter properly was to place another order for a similar number of plates to be made with their flanges and spike holes staggered in the opposite
304 direction to the spike holes and flanges of the plates first delivered.

X Q. 83. That is there would have to be two sets of Fox tie-plates each set staggered for the different rail?

A. Yes, that is correct.

X Q. 84. So that practically there would have been a right and left-hand tie-plate?

A. Yes.

X Q. 85. And the other difficulty with the Fox tie-plate was that it would bend or buckle?

A. Yes, it bent and buckled very easily.

X Q. 86. Was it thinner or thicker than the Wolhaupter tie-plate like "Exhibit 33," I mean in vertical section of the plate itself?

A. Of the same thickness I believe as the Wolhaupter plate was made at that time. Afterwards the manufacturers of the Fox plate endeavored to overcome this difficulty of buckling by making the Fox plate thicker than the Wolhaupter plate but said thicker plate buckled more readily than the Wolhaupter and it had other difficulties added by the increase of thickness of the plate.

X Q. 87. Well, the Fox tie-plate had projections from the lower surface for the purpose of ing the tie did it not?

A. Yes.

X Q. 88. And what w condition of the upper surface, did it have a shoulder or projections to answer the purposes of a shoulder?

A. Yes it had one small raised boss or portion pressed up from the bottom of the plate.

X Q. 89. And the outside flange of the rail pressed against this upward projection, did it?

A. Yes.

X Q. 90. Who was the inventor of the Fox tie-plate?

305 A. Man by the name of Fox, I believe.

X Q. 91. You do not recall his full name?

A. No, I don't, Mr. Reed.

X Q. 92. How many of the projections on the lower side were there in the Fox tie-plate?

A. Two, of a somewhat triangular shape and extending only a short distance of the length of the plate. I would say of trapezoidal form rather than triangular.

X Q. 93. Did they engage the tie parallel to the grain or at right angles.

A. They engaged the tie parallel to the grain.

X Q. 94. Was the space between them in the direction of the rail or crosswise of the rail?

A. They were not opposite to one another either longitudinally or laterally of the plate, they took a staggered form, or rather were placed in a staggered direction.

X Q. 95. Well if the plate had been turned upside down would the bottom of the rail have gone between those projections if inserted parallel to the face, I mean the vertical face of the projections. I will ask you to make a sketch.

A. I have done so.

X Q. 96. Does this pencil sketch which is marked "Defendant's Exhibit B," show your recollection of the Fox tie-plate?

A. It does. The proportions may not be exactly right.

X Q. 97. The vertical edges of the lower projecting trapezoidal flanges were in opposite directions, were they not, from the center of the plate?

A. Yes.

X Q. 98. And the thinness of the trapezoidal figures was parallel with the grain of the tie?

A. Yes.

306 Mr. Reed: The sketch is offered in evidence as "Defendant's Exhibit B."

X Q. 99. The first style of the Servis tie-plate that you were acquainted with had a flat top, did it not?

A. Yes.

X Q. 100. Without corrugations, grooves or shoulders?

A. Yes.

X Q. 101. Were there spike holes in it?

A. Yes.

X Q. 102. And the projections from the lower side were two edges or sides turned down?

A. Yes, and in some cases a central rib parallel with the two side flanges along the under portion of the plate.

X Q. 103. And the lower projection engaged in the tie lengthwise or along the grain?

A. Yes.

X Q. 104. When was it that you first saw Servis plates of this description in actual use?

A. I do not now recall exactly but I think in the early nineties.

X Q. 105. On what road?

A. I do not recall which road I saw the Servis plate on.

X Q. 106. You found it in actual use though when you began to turn your attention to tie-plates?

A. Yes.

X Q. 107. You spoke of a modified form of Servis plate which had the edges turned down, two small under-flanges and a rib on the center of the top?

A. Yes.

X Q. 108. When did you first see this form in use or on the market?

307 A. I do not recall that I ever saw it in use. It was on the market and being illustrated I believe in 1894 but I understood very few were sold and it was an entirely impractical plate for the reason that to remove the upper rib on the center of the plate in order that the rail might rest on the flat portion of the plate, the whole rib and surface of the plate under the rib were punched down and out of the plate the full width of the rail base leaving a hole through the center of the plate and extending the most of its length. Afterwards this method of manufacture was slightly changed by bulldozing or shearing off the top rib on a line level with the surface of the plate.

X Q. 109. Do I understand that this so-called rib was a projection from the upper surface of the plate or a depression or groove?

A. It was a projection from the upper surface of the plate.

X Q. 110. And it was exactly the width of the rail base and the rail base rested upon it and covered its entire horizontal surface?

A. No, you misunderstand the construction. The rib was rolled

longitudinally of the plate and along the center of its top surface. When the plate was placed in track this rib was run at a right angle to the longitudinal axis of the rail and in order that the rail base might rest on the top body surface of the tie-plate, the portion of the rib which would be under the rail base was removed thus leaving two small portions of the rib at each end of the plate against which both side edges of the rail abutted.

X Q. 111. That is the lower projections or flanges were parallel to the length of the plate and engaged in the tie lengthwise and the top rib was also parallel to the length of the plate and parallel to the bottom flanges and was cut out in the center, rail width, and
308 the rail fitted into this cut so that the bottom of the rail rested upon the adjacent portions of the plate top?

A. That is right.

X Q. 112. And the portions of the rib were actually cut out so that there was an open space beneath the rail about the center of the plate of the width of the rail longitudinally and the width of the rib cross-wise of the tie?

A. That is right.

X Q. 113. Wouldn't the effect of this open space be to permit the sand and grit to work out from between the rail and the plate?

A. No.

X Q. 114. When was it that you saw this form on the market that you have just been describing of the Servis plate?

A. I believe in 1894, or thereabouts.

X Q. 115. Before or after you had applied for your letters-patent No. 538,809?

A. I do not now recall.

X Q. 116. This application was filed March 13, 1895, according to the specification, that would make it before would it not?

A. I don't recall and it offered no suggestion to me, in the application for Letters-Patent No. 538,809.

X Q. 117. Are you the author, designer, engraver, photographer or proprietor of sketch "Complainant's Exhibit No. 48"?

A. I was the author and proprietor of it at one time.

X Q. 118. This is a reproduced photograph, is it not?

A. Yes.

X Q. 119. Where is the original photograph?

A. I may have a copy in my files.

X Q. 120. Where are the original plates from which the original photograph was taken?

309 A. That I cannot say.

X Q. 121. Who took the original photograph?

A. I believe it was taken in our office at The Railroad Supply Company by one of our employes under my supervision.

X Q. 122. When was the photograph taken?

A. I should say it was in the year 1897.

X Q. 123. From what source did you obtain the Servis form of tie-plate that was photographed?

A. From a railroad official who placed these two plates in his track at the same time and under the same conditions in order that he

might satisfy himself as to the relative wearing value of the two plates.

X Q. 124. Who was the official and in what road were they placed?

A. J. L. Single, general road master of the Long Island Railroad at that time.

X Q. 125. Did he tell you in what part of his road he placed the two plates?

A. Yes, he did at the time I received the plates. I believe it was at Long Island City.

X Q. 126. Did he tell you whether he placed them in a track that was straight or curved?

A. In track on tangent, I understood.

X Q. 127. Were there more than one specimen of each plate used?

A. Yes, quite a number of each.

X Q. 128. Did he furnish you with more than one specimen of each after the test?

A. Yes, some few.

X Q. 129. Could you tell how many of each?

A. I should say he furnished us with three or four of each though he had a large number of others in his track which he did not remove at that time.

310 X Q. 130. Did you ever see the plates while they were in the track subjected to the test?

A. I believe not, not at that time at any rate, I may have later.

X Q. 131. Well, do you recall at any time of seeing the plates that were furnished you after the test when they were in the track.

A. No.

X Q. 132. Do you recall seeing any of the plates at any time in the track, I mean any at all that were used?

A. On this railroad at this place?

X Q. 133. Yes.

A. I believe I did but I cannot accurately recall the time.

X Q. 134. Do you think it was after these specimens were furnished?

A. I am satisfied it was after if at all.

X Q. 135. Do you recall how the plates that you saw in the track were placed whether in straight track or curves, main line or switch?

A. My impression is that I saw them and they were in tangent. These plates illustrated on "Exhibit No. 48" were not in a switch or switch-lead, they came from ties that were not switch-ties.

X Q. 136. The ties were not furnished you in connection with the plates were they?

A. Portions of the ties were.

X Q. 137. Portions of the ties on which these plates were photographed?

A. Yes.

X Q. 138. How were the different plates, Servis and Wolhaupter, placed in the road, did they alternate or was one kind placed under the rail at one end of the tie and the other at the opposite end?

A. I believe they were placed in different ways so as to
311 make a thorough test in order that proper conclusions could be reached. They were not placed so as to favor the Wolhaupter plate.

X Q. 139. How were the two specimens shown in "Exhibit No. 48" placed with relation to each other, were they on the same tie?

A. I do not now recall.

X Q. 140. Do you know whether they were on adjacent ties?

A. They were on adjacent ties, that is, ties near together, and were placed as far as possible under similar conditions in order that the railroad official might judge of the relative value of the two plates for his actual service conditions in order that he might make a report to the higher officials of the road as to which plate was the better of the two as this road had been buying both types of plate.

X Q. 141. Out of this set of four or five of each kind of plate furnished you selected the two in question and had them photographed?

A. Yes.

X Q. 142. And you had them photographed for the purpose of showing the relative wearing qualities of the two plates?

A. Yes.

X Q. 143. And you intended to use and did use the photograph in soliciting orders from different roads?

A. To some slight extent, yes.

X Q. 144. Do you know whether the Wolhaupter plate shown in the photograph "Exhibit 48" was under the same rail or on the same side of the track as the Servis plate shown in the photograph?

A. I cannot say but it was under the same weight and section of rail. I mean by section that the width of the base, the height
312 of the rail and all its dimensions were similar and were made undoubtedly at the same rolling as the rail under which the Servis plate was placed.

X Q. 145. But whether the two plates photographed were on the same tie or whether they were on the same side of the track you cannot tell?

A. No. I should say those plates were both on the same side of the track after looking carefully at the plates shown in the exhibit.

X Q. 146. That is the conclusion that you draw on inspection of the photograph?

A. Yes.

X Q. 147. And not from anything that you recall or saw?

A. No, merely from the photograph.

X Q. 148. Isn't it perfectly apparent from an inspection of the Servis plate that this plate was placed on the outside rail of the curve and that the outer flange of the rail was on a front end of the Servis plate as you look at the photograph?

A. No.

X Q. 149. Doesn't the depression on the Servis plate appear to you deeper at the front end of the photograph than on the opposite end?

A. It is deeper, that is matter that is explained in my previous testimony, the wear takes place under the rail whether it is on curve or tangent, on account of greater loads applied to the outer rail flange than to the inner rail flange.

X Q. 150. As the train load would go around the curve the resultant force on the tie-plate would be greater nearer the outside bottom of the flange of the outer rail of the curve, would it not, than on the inner rail or on the inner flange of the outer rail?

A. No, in a terminal such as this was and where these plates
313 were placed, if they were on a curve the greatest loads would come on the inner rail.

X Q. 151. Well would the greater resultant force be at the outer or inner flange edge of the inner rail?

A. Mr. Reed this would depend solely upon the conditions at that particular spot, it might be on one side or it might be on the other of the inner rail. On the outer rail it would almost certainly be on the outer flange of the rail. Were these plates on tangent or if the conditions are to be considered on tangent then the greater resultant load would come on the outer flange of each rail.

X Q. 152. What is your distinction between curve and tangent?

A. In engineering parlance tangent is a piece of straight track, or piece of track laid in a straight line. Curved piece of track is laid on a curved line.

X Q. 153. Are all the spike holes in the photograph of the Wolhaupter plate, "Exhibit 48," of the same size?

A. No.

X Q. 154. The lower right-hand spike hole is considerably elongated, is it not?

A. Yes, and so are some of the others.

X Q. 155. Were they of this form when the plate was laid?

A. Yes, they were purposely made so.

X Q. 156. Then it was the custom to make the spike holes of different lengths in the Wolhaupter plate?

A. No, it was not the custom or wish or desire to make them so, but in this particular case the road had a number of rails having different widths of base under which they desired to place these tie-plates that were first supplied. Consequently the holes for the spikes had to be made of different lengths and sizes and it was ex-
314 pected that these rails of different width of rail base would before the life of the tie-plate was exhausted be taken out of track and their new rail of their standard section be put in in their place and it was also desired that the tie-plates placed under these different widths of rail bases should not be disturbed when the new rail was placed upon them and the new spikes driven. I very strongly objected to punching the plate in this manner because the spikes applied to the narrower widths of rail base had no metal backing of the plate to support them and thus one value of the plate would be lost, the spikes would allow the gage to widen and the movement on the plate of the rail would be excessive and thus tend to a much greater tie-plate wear than if the holes were punched for one particular width of rail base.

X Q. 157. Do you suppose you could procure the original plates that were photographed in "Exhibit 48" or could you place us on the track of them?

A. I believe these were turned over to The Railroad Supply Company.

Mr. Brown: Complainant's counsel will be very glad to have a search made for the original tie-plates inquired of and if they are in

the custody or control of the complainant he will be pleased to produce them and offer them in evidence as exhibits.

X Q. 158. Then the last you know of these plates they were in the custody of The Railroad Supply Company?

A. Yes.

X Q. 159. The Wolhaupter tie-plate shown in "Exhibit 48" when placed in the track had the corrugations on the top crosswise of the rail and the top corrugations and lower flanges parallel to grain of tie?

A. Yes.

X Q. 160. Are you familiar with the patent No. 469,386,
315 for Railway Tie-Plates, to C. H. Dunham and the specification thereof?

Mr. Brown: Objected to as being outside of the scope of the direct examination and also as incompetent, irrelevant and immaterial.

A. I know of the patent but cannot say that I now recall all the details of the specification.

X Q. 161. When did you first become acquainted with this patent specification?

Mr. Brown: Same objection.

A. I believe about the summer, spring or summer of 1896, though I am not now positive.

X Q. 162. Examine the drawing on the Patent Office blue-print which I now show you of the specification of said letters-patent and state whether or not the drawings do not clearly show a tie-plate with a corrugated top with the rail running at right angles with the corrugations and the corrugations parallel to the grain of the tie?

Mr. Brown: Same objection and further objection is made that the drawing speaks for itself.

A. Yes, the drawing shows that.

X Q. 163. Is there any material difference either in construction, operation or function between the top corrugations of the Dunham patent, and the top corrugations of the Wolhaupter tie-plate shown in "Exhibit No. 48"?

Mr. Brown: Question is objected to as improper cross-examination, incompetent, irrelevant and immaterial and also as calling for the construction of letters-patent and the drawing of a conclusion therefrom, the witness not having qualified as a patent expert.

A. I don't feel competent to testify as an expert on patents. I think the illustrations show clearly what it is, but I do know
316 that as a practical device compared with the Wolhaupter plate it really does not compare and cannot compare at all.

X Q. 164. Well the illustration in the patent specification and the photograph both show top corrugations on the tie-plate, don't they?

Mr. Brown: Last objection repeated.

A. They show top grooves or channels.

X Q. 165. Well whatever you style them, corrugations, grooves or channels they appear both in the patent drawing and in the photograph?

Mr. Brown: Same objection.

A. Yes.

X Q. 166. And whatever you call the one you could most appropriately call the other?

Mr. Brown: Same objection.

A. Yes, sir, I should say so.

X Q. 167. And in both patent drawing and photograph the corrugations, grooves or channels run parallel to the grain of the tie and at right angles to the length of the rail?

Mr. Brown: Same objection.

A. Yes.

X Q. 168. And in both patent drawing and photograph the rail base rests at right angles of the length of the plate upon the tops or highest portions of the corrugations, grooves or channels?

Mr. Brown: Same objection.

A. The rail rests on the highest portion of the raised part between these grooves and channels but from a practical standpoint in quite a different manner. In the case of the so-called Dunham plate the rails merely rest on lines or points giving very little bearing and making the plate subject to compression and wear, whereas in
317 the Wolhaupter plate there are broad supporting surfaces between the grooves thus preventing the distortion of the metal that would take place in such a device as the Dunham plate.

X Q. 169. But in both cases the rail-base is supported by the tops of the highest portion to the grooves or channels of the surface of the plate?

Mr. Brown: Same objection.

A. Yes, where there are channels, in one case, Figure 4 of the Dunham construction, is shown a flat surface for the rail base to rest on clearly indicating that the grooves on top were not the prime object or thought of the inventor.

X Q. 170. Read from the specification on page 1 of the Dunham patent. Does it not state there, "Fig. 4 represents a modification"?

Mr. Brown: Same objection.

A. Yes, that only verifies what I suppose. Fig. 4 shows all these grooves or channels filled up solid making a smooth, flat bearing for the rail which could be easily cut and abraded by sand or grit. Such was not the idea or conception in the design of the Wolhaupter plate referred to.

X Q. 171. The other three figures in the Dunham patent all show corrugated tops do they not, or tops having grooves or channels lengthwise of the plate with raised portions between them to support the rail base?

Mr. Brown: Same objection.

A. These grooves or channels on top of the plate shown in Figs. 1, 2 and 3 were formed merely as a result of the method of construction of the plate as I recall it. As I recall the patent the prime object of it was to leave air spaces beneath the plate and on top of the tie and the simplest and easiest way of making such a plate was
318 to take an ordinary piece of commercial corrugated iron and place it beneath the rail and this would naturally leave openings or grooves on the top of the plate, but were the plates manufactured in quantities in a rolling mill of a section and weight necessary to carry the ordinary loads on a railroad the plate would be made much heavier than shown and would undoubtedly ha[illegible] been made with a flat top as shown in Figure 4.

My recollection is that we purchased this patent for the reason that it had some claims which included or covered air spaces between the under portion of a plate and the tie and as the Wolhaupter plate in its early manufacture and especially as applied to oak ties left these open air spaces underneath the plate and on top of the tie it was desirable if not necessary from a business standpoint to own this patent in order that our competitors might not obtain it. The air spaces under the Wolhaupter plate as described above can be seen even on a soft tie, see "Exhibit No. 33, Wolhaupter Tie-Plate on a Redwood Tie."

X Q. 172. But whether the tie-plate with a corrugated, grooved or channeled top was the fundamental idea in the mind of Dunham or not, the three drawings, Figs. 1, 2 and 3 of the specification, plainly and distinctly show a tie-plate with a corrugated, grooved or channeled top, do they not?

Mr. Brown: Same objection.

A. I should say that these pictures speak for themselves in that respect.

X Q. 173. As you look at it do they not to you show a corrugated, grooved or channeled top on the tie-plate?

Mr. Brown: Same objection.

A. Yes, as those words specify, but not in the sense that practical tie-plate men would consider.

X Q. 174. Well practical or impractical the corrugations,
319 channels or grooves on the top of the tie-plate appear in these patent specification drawings, do they not?

Mr. Brown: Same objection.

A. Why I suppose so Mr. Reed, although it doesn't seem to me to be the same thing at all.

X Q. 175. Are the corrugations, channels, or grooves shown in these drawings of sufficient depth or dimension to operate to carry off from beneath the rail base, I mean from the surfaces or places that the rail rests on, sand and grit and other abrading substances?

Mr. Brown: Last objection repeated.

A. As explained before the sand and grit deposited on a tie-plate is produced by the passage of the train. In this Dunham plate the first wheel passing over it would flatten the plate and make it a thin flat sheet and thus make it a flat top tie-plate before any sand could get on it.

X Q. 176. As shown in the drawings, however, there is sufficient space in these grooves or channels if remaining intact in operation to draw of- the sand or grit from between the rail and plate, I mean at the places of contact, is there not?

Mr. Brown: Same objection.

A. The drawings or illustrations shown in the drawings to an engineering man shows an entirely impractical structure for the simple reason that any load that rail and tie would be designed to carry would immediately destroy the structure of the plate, make it impractical and make it a thin flat sheet of metal, so that I do not see how it could stay intact.

X Q. 177. Well assuming that it could be cast or rolled thick enough to stay intact are not those grooves or channels of sufficient dimensions as shown in the drawings to carry off the sand and grit from between the rail bottom and plate at places of contact?

320

Mr. Brown: The question is objected to for the same reasons as heretofore stated and further because calling for the consideration of a hypothetical structure not before the witness and not shown to have been produced or manufactured by the patentee or any other person at any time and therefore also as being unfair to the witness.

A. Why I could conceive of a great many different constructions that might be made practical constructions which would have grooves of the same depth as the grooves shown on the top of that thin plate which would act to hold the same, but they would not be the plate or the device shown in the Dunham patent.

Recess.

X Q. 178. It was found that in the practical use of the Wolhaupter style of tie-plate on hardwood ties that the flanges upon the lower surface did not enter completely into the wood of the tie and so left air spaces between the tie and the bottom of the plate, I understand, is this right?

A. With our first form of plate it would not immediately bed the whole way on very hard new oak ties, but on soft ties and oak ties several years old that were not extremely hard the plate would bed quite readily under traffic in a very short time and would bed entirely under traffic on all ties after a period of time. The first section or form of the plate was afterwards modified so that the plate would bed more readily and more quickly.

X Q. 179. But as constructed and used for a time the Wolhaupter tie-plate did encounter some conditions in which the flanges did not completely penetrate the tie fibres and air spaces were left between the top of the tie and the bottom of the plate?

321

A. Yes, that was the case and it was also the case with other tie-plates.

X Q. 180. I understand that the projecting flanges from the bottom of the Servis plate both at the sides and in the center or rather in the central portions of the plate were sharpened so as to penetrate the tie?

A. Yes.

X Q. 181. Where were the lower projecting flanges in the Servis plate that were in the central portion of the tie-plate placed in reference to the rail flanges, were they directly underneath the sides of the flanges or not?

A. All of the lower projecting flanges of the Servis plate ran at right angles to the rail flanges and consequently they were partially underneath them and partially out beyond them.

X Q. 182. What was the function of these projecting flanges in the Servis plate aside from the edge flanges beyond penetrating the tie material and serving to stop horizontal movement of the plate? They strengthened the plate, did they not?

A. Yes.

X Q. 183. Did they have any other function than tending to prevent horizontal motion of the plate and strengthen it?

A. Yes.

X Q. 184. What?

A. They tended to make the plate cling to the tie and become part of the tie. This was especially the case in the later form of these flanges.

X Q. 185. Then the flanges on the lower side of the Servis plate operated to prevent horizontal motion on the part of the plate
322 to strengthen the plate and to unify the plate and tie?

A. Yes.

X Q. 186. Is this the sum total of the functions of the projections upon the Servis plate on the lower surface?

A. If you mean by the flanges operating to prevent horizontal motion on the part of the plate that these flanges prevent the plate from moving laterally and longitudinally of the tie, then yes.

Mr. Reed: I did so mean.

X Q. 187. Are the functions of the flanges or projections from the lower side of the Wolhaupter tie-plate the same as these last functions of the Servis tie-plate lower flange or projections?

A. Yes, but they had even more.

X Q. 188. Well do you mean that they have other functions or merely perform these functions better in your judgment.

A. They perform the same functions that you mention above and better and from their particular form they tended to compress the fibre of a softwood tie beneath the plate so that it became dense and hard and similar to the fibre of the hardwood tie.

X Q. 189. That was because they were wedge-shape in section, was it not?

A. That was because they were wedge shape as were the Servis

flanges, they were closer together and they were connected by an arch above.

X Q. 190. What are the functions of the corrugations, grooves or channels on the surface of the tie-plate?

A. The functions of the grooves or channels on the top surface of the tie-plate are generally to leave air spaces beneath the rail base so that when the rail rises off the plate under the wave motion
323 of the track the inrush of the air will not be so great as where there are no such grooves and therefore the tendency of the inrush of the air will not be to suck in the sand and grit to the same extent. What sand and grit is sucked in from the bearing surface of the plate will soon work off and work into these grooves thus preventing or largely avoiding the grinding out of the top surface of the plate. These grooves also perform another very important function, namely, they lighten the plate to such an extent that they give the manufacturer a plate having much less weight and consequently enable him to more successfully compete with his rivals as there is little or no additional cost in the making of such grooves.

X Q. 191. Have the top corrugations, channels or grooves any relation to or effect upon the projections or flanges from the lower surface?

A. Yes.

X Q. 192. What are they?

A. In the Wolhaupter plate as generally designed under patent No. 538,809, these grooves come directly over the flanges and the rail is supported on the plate intermediate of the flanges below. The flanges below form piers or abutments and largely support the plate and the bearing portion that the rail rests on is the crown of an arch between them. In applying the load from the rail to the crown of this arch the load would be distributed to the two flanges and in that respect would be considered to be an economical and engineering design.

In the Wolhaupter plate as generally designed under the patent No. 691,332, these grooves come directly over the spaces between the flanges and the rail is supported immediately on top of the flanges, there being no arch between the flanges and consequently very little tendency to compress the wood fibre. This construc-
324 tion by some engineers is considered more desirable than that shown in plates made under the general design of the patent No. 538,809. Some engineers prefer one type of plate and some engineers another.

X Q. 193. Of course this statement would not apply as the plate was arranged with the flanges and corrugations at right angles to the rail?

A. Yes it would apply under those circumstances.

X Q. 194. So that the relation existing between the top corrugations, grooves or channels and lower projections would apply whether the plate were so placed that flanges and corrugations were parallel to the rail or crosswise thereof?

A. Yes, but as plates were made the form and thickness in which they were made they would apply probably more directly to the

plates where the flanges entered the grain of the wood parallel therewith.

X Q. 195. That is the function would exist in both cases and the relation but in a different degree, I mean the relations between the top corrugations and lower projections?

A. Yes, but as I said before much more would they relate to the plates having flanges parallel with the grain of the wood, because the compression of the grain sidewise thereof is much more necessary under the tie-plate and is much more easily accomplished than the compression of the grain endwise thereof.

X Q. 196. I understand that in any tie-plate having lower flanges, wedge-shaped in section and engaging in the tie there is a tendency to compress the fibre of the tie between the flanges especially if these wedge-shaped flanges are curved or arched in as they meet the bottom of the plate?

A. Yes.

X Q. 197. Any tie-plate having a groove extending clear
325 across the plate on the top and the rail passing over this groove so that there is a space beneath the bottom of the rail would in some degree perform the function of carrying off the grit and sand and eliminating the abrading force of the grit and sand, would it not?

A. Well if that groove was of sufficient depth and volume it would.

X Q. 198. I understand that the sand and grit which by getting between the rail bottom and tie-plate tend to abrade and wear it off are very minute particles?

A. Not necessarily so.

X Q. 199. Well if they were not minute when they got in they would soon be reduced to powder, would they not?

A. Yes but in the very reduction of them to powder the plate would be abraded and ground.

X Q. 200. I had concluded from your former testimony that the sand and grit which got between the rail bottom and the tie-plate in a flat top tie-plate were small and fine, as a general rule, was I right or wrong?

A. Why this sand or grit may be small or may be coarse. For instance, the sand and gravel composing gravel ballast is of all sizes and when the track men are lifting track or tamping ties as is often done and must be done to maintain good track, portions of this ballast becomes spread over the ties along the side edges of rail and on top of the tie-plates and in fact is banked often against the rail flange. When the first train passes over the track the rail may move, and often does, as much as a sixteenth of an inch off the tie-plate and when this occurs the sand and gravel which is banked up against the edge of the rail flange will work underneath, so that it is essential to have grooves or channels of ample depth to dispose of the sand and gravel under these conditions.

326 X Q. 201. And the wider and deeper the grooves and the less the surface of actual contact between the tie-plate and the rail bottom, the better will this function be performed?

A. No that is not strictly true.

X Q. 202. Well, put it in absolutely accurate form then.

A. The grooves must be so designed as to depth and volume that they will so far as possible take care of all or the greater portion of sand or gravel which will work beneath the rail and on the other hand the bearing surfaces for the rail must be made of ample width and bearing to properly support the rail so that the said bearing surfaces of the tie will not be crushed or distorted by excessive loads from the rail and the rail must be supported by these bearing surfaces so that no undue strains are applied to the rail flanges when the wheel load is on the rail.

X Q. 203. Then it is a good idea to have the lower projecting flanges when parallel to the rail practically beneath the place or places that the rail comes into contact with the upper surface?

A. Yes, that is a good idea but it isn't necessarily the best idea in the opinion of all engineers. Engineers usually differ in their opinion upon such subjects as doctors do about diseases.

X Q. 204. Now in order to properly support the rail there should be a surface of contact immediately beneath the center of the rail with the tie-plate, should there not?

A. No, not necessarily.

X Q. 205. But I understand that it would not do to support the rail at the sides of the flanges, but that there should be a support immediately beneath the center of the rail?

A. That is not necessary. That is to say, it is not neces-
327 sary to have a support immediately beneath the center of the rail, though it might not be good practice and it might not be safe to support the rail at the extreme outer edges of the flanges.

X Q. 206. But would it do to have a groove in the tie-plate so that it came underneath the center of the rail when the rail bottom was supported by said two-thirds of the flange on each side coming in contract with the tie-plate?

A. Yes, will do and as an illustration I might state that one of the most severely treated parts of the rail is at the end of the rail or at the joint and one of the most successful and widely used joints has no support for the rail immediately under the center of the rail. This is the "Continuous" joint.

X Q. 207. You mentioned the C. A. C. tie-plate as being on the market at the time you put the Wolhaupter tie-plate on sale, will you please describe this C. A. C. plate?

A. The C. A. C. plate as made at that time consisted of a rectangular form of flat metal with a shoulder or abutment across one top side near one edge and beneath the plate two series or rows of teeth for entering the top surface of the tie.

X Q. 208. When did you first see it on the market?

A. I should say in 1894, or thereabouts.

X Q. 209. Were the lower surface projections or teeth arranged to enter the tie parallel to its grain or crosswise?

A. Crosswise of the grain.

X Q. 210. Who manufactured the C. A. C. tie-plate?

A. I believe it was the Tidewater Steel Company or what I believe

was afterwards called the Diamond State Steel Company at Wilmington, Del.

X Q. 211. And was it made for the Q. & C. Company?

328 A. I believe it was first made for a man by the name of Churchward who invented it or parties interested with him and who afterwards obtained a license under the patent, though my information on that subject may not be correct.

X Q. 212. When did The Railroad Supply Company first acquire or market or announce that it would market the C. A. C. plate?

A. Sometime after I left its employ.

X Q. 213. That would be about what year?

A. About 1899, or 1900, 1901, somewheres in there.

X Q. 214. Do you know of any railroads that it was used on?

A. This plate was not extensively used and as my recollection serves me there was only one large order placed for this plate, although it was distributed about the country in small quantities to different roads quite generally. It was not considered generally by the majority of railroad men as an entirely successful plate and on account of the difficulties of manufacture and other plates which were of a better design or more successfully manufactured, soon practically went off the market.

X Q. 215. What are the functions of a shoulder on the top of the tie-plate?

A. The function of a shoulder on the top of a tie plate is to form an abutment against which the flange of a rail rests so that in case the rail moves laterally it will not slide on top of the plate but will carry the plate with it and a shoulder also will take the lateral thrust of the rail away from a spike or the throat of a spike if the plate is properly punched for the spike. The intention usually of the shoulder is to hold the rail to gage and prevent lateral thrust but unless the plate itself is held properly and firmly to the tie

329 through spikes or some other medium, it will move on the tie with the rail and allow the gage to widen.

X Q. 216. Then the real purpose and function of the shoulder is to prevent widening of the gage by lateral movement of the rail?

A. Yes, but the shoulder unaccompanied with means for fastening the plate to the tie will not accomplish this.

X Q. 217. Well I mean so far as the shoulder itself is concerned as a part of the tie-plate?

A. Yes for that purpose and to prevent the spike from being cut by the rail.

X Q. 218. Has the shoulder any effect on the corrugations or the corrugations on the shoulder?

A. Yes, to some extent, the shoulder comes up beside the rail flange and often extends a little bit above it forming a slight receptacle or groove into which sand and dust can collect between the flange of the rail and the shoulder of the plate and this does not work away but works down underneath the lower edge of the flange of the rail very badly grinding out the rail flange and the space on the plate next to the shoulder and this under certain conditions is so bad that I have seen plates of this type that did not have

any grooves with their shoulders largely worn through or off. By placing a groove on the top of the plate near the shoulder some of the wear, sand wear, can be avoided.

X Q. 219. But in subserving its functions in the tie-plate, the shoulder and the corrugations on the top have no direct effect on each other, have they, I mean a shoulder performs its duty of preventing lateral thrust just the same way whether the top of the tie-plate is corrugated or not?

A. The groove or channel in the plate benefits the shoulder though I know of no reason why the shoulder should benefit the groove.

330 X Q. 220. But the only way in which the channel benefits the shoulder is by letting the grit and sand out, is it?

A. Yes, as explained in a recent answer.

X Q. 221. When did you first see the Goldie type of tie-plate on the market?

A. My recollection is about 1892.

X Q. 222. Who manufactured it then?

A. I believe the Dilworth, Porter & Co. of Pittsburg, always manufactured the Goldie plate, but it is possible the very earliest forms have been manufactured by other parties but I do not think so.

X Q. 223. And the Dilworth, Porter & Co. sold it, did they not?

A. Always so far as I know.

X Q. 224. Now the first form of the Goldie plate had flanges or projections on the bottom, did it not?

A. Yes, sir.

X Q. 225. And it had these flanges parallel to the rail and crosswise of the tie, did it not?

A. Yes.

X Q. 226. And these flanges were wedge shaped in section and thin edged and sharpened.

A. They were wedge shaped but hardly could be called sharpened, they were really of triangular shape but of a form I should say like an equilateral triangle.

X Q. 227. Were the inside flanges of the Goldie plate where they joined the lower tie-plate surface on the inside of the flange angled or rounded?

A. I cannot state now but I know they soon would become rounded as the rolls which made them would gradually wear off in this corner and form a fillet or round.

X Q. 228. How far from the sides of the plate bottom were the lower surface flanges of the Goldie type?

331 A. I don't recall now but I should say two, two and one-half, three inches.

X Q. 229. So that they came under the rail bottom?

A. I think they did, but I am not sure.

X Q. 230. The construction of the Goldie lower surface flanges would tend to compress the fibre of the tie when they engaged in it would they not, I mean between them?

A. No, hardly so, the flanges you are speaking of passed across the grain of the wood and it would be necessary for these flanges to cut the grain before the fillet could have any effect upon compressing wood and these flanges were not sharp enough to cut the fibre but merely depressed it and then abraded it and by such abrasion formed pockets for themselves on the top surface of the tie, and the plate in no sense became part and parcel of the tie as the Wolhaupter and Servis plates of which we have been talking.

X Q. 231. Then the lower surface of the Goldie plate between the flanges did not rest on the surface of the tie?

A. Well, Mr. Reed, the flanges are of such a small depth that they could compress and bend down the fibres of the wood beneath them sufficiently to allow the plate to take a bearing on the main portion of the tie both between these flanges and beyond them.

X Q. 232. Then to some extent at least they did compress the fibres of the tie?

A. Yes, they compressed the fibre of the tie beneath their lower edges and not between the flanges proper.

X Q. 233. Then the inner surfaces of the Goldie flanges and the fillet at the top did not in your judgment compress the tie at all?

A. As explained above these flanges were so small with
332 such a rough edge and dull edge that they rather abraded the wood and cut or ground a way for themselves into the tie; after that the wood was compressed beneath them and this could hardly be called compressing the wood of the tie in the sense that the Wolhaupter arch and girder plate, for instance, compresses the fibre tie between its flanges and under its arches. The compressibility of wood as is well known is largely at right angles to the direction of the fibres and not in the longitudinal direction of its fibres. This is illustrated very clearly in every day use from the fact that a board in the floor of a house six inches wide and eighteen feet long will compress or narrow itself one-quarter inch in width in its six inches of width and possibly a sixteenth of an inch in its eighteen feet of length.

X Q. 234. Well that is due to the drying of the wood is it not and not to the operation of any extraneous force?

A. This illustration is merely intended to show that wood is compressible and does compress to a much greater extent across the fibre than in the length of the fibre.

X Q. 235. Well what extraneous force depresses the board in the situation you describe?

A. Extraneous force of heat.

X Q. 236. Do you think a hot stove in a room that was floored with wet flooring would compress, through the heat emanating from it, the boards in the floor in the same way it would be compressed if Mr. Hawley happened to walk over it?

A. The heat from a stove would act in a different way than that of a heavy man walking over a board. The heat from the stove would drive the moisture in the fibres of the wood into vapor and the fibres of the wood when left with themselves without moisture

would contract laterally but not longitudinally from their
333 internal force of contraction, whereas the compression produced by heavy weight or a man walking over them would be produced by exterior force.

X Q. 237. Did the Goldie tie-plate have a flat top surface?

A. I believe it did so far as my observation went.

X Q. 238. Are you not aware that it had a depression or wide shallow groove running longitudinally parallel with the rail?

A. If it did have a wide longitudinal groove running lengthwise of the rail it was not noticeable.

X Q. 239. The Goldie patent specification No. 485,030 shows such shallow groove or depression, does it not?

A. Yes.

Mr. Brown: Question is objected to as incompetent, irrelevant and immaterial and furthermore that there is no evidence in the record that the Goldie plate placed upon the market and regarding which the witness has been interrogated was made in accordance with the Goldie patent referred to.

You may now continue your answer which I interrupted with my objection.

Yes, the patent drawings above referred to do show such a shallow depression, but I never saw Goldie plates made like the plate shown in these drawings, and do not believe that it ever was made so. This groove for the purpose of preventing sand wear would not be materially effective.

Mr. Reed: The last portion of the answer is objected to and motion to strike out.

X Q. 240. How do these flanges on the bottom of "Complainant's Exhibit No. 15" compare with the flanges on the bottom of the Goldie type of tie-plate in regard to shape, size and situation relative to the rail?

334 A. They are much the same in size and shape but my recollection is that they were considerably closer together and more nearer the center of the rail than as shown on this plate "Exhibit 15."

X Q. 241. Still the bottom flanges on "Exhibit 15" do come under the sides of the rail bottom, do they not?

A. Yes.

X Q. 242. What railroads had you seen the Goldie tie-plate on the pattern you have been describing, I mean the first pattern?

A. As explained before there were comparatively few of these plates put out and that in the early days of tie-plates in this country and I do not now recall just what roads I saw these plates on.

X Q. 243. Did you ever see them on the Southern Pacific?

A. I never saw them on the Southern Pacific.

X Q. 244. Did you ever see them on the Santa Fe?

A. I don't ever recall having seen them on the Santa Fe.

X Q. 245. Were you ever informed or did you ever hear that they were used on the Santa Fe?

A. I heard that there was a small trial lot put on the Santa Fe in the early days of tie-plates.

X Q. 246. Well did you ever see the Goldie tie-plate in any railroad, if so, in what railroad and when, or hear of it?

A. As I said I do not now remember what roads I saw them in, but I believe I did see them, at least saw the top of them.

X Q. 247. You saw them, that is your general recollection, on some road or roads in actual position?

A. Yes, I saw a few in actual position and they were very rapidly destroying the ties and were a poor excuse for a tie-plate in my opinion.

335 X Q. 248. Now did you ever see the Goldie tie-plate not in position on a road?

A This form you refer to?

X Q. 249. Any form.

A. Yes, a great many of them.

X Q. 250. Now please take the first form of Goldie tie-plate which you saw, describe it briefly and then each other form, describing it very briefly so as just to distinguish it, tell us when and where you saw each?

A. The first form that I remember seeing was a flat piece of plate metal with a shoulder on top near one side and two small triangular ribs running across the bottom of the plate and parallel with the shoulder on top. This plate went onto the tie with the ribs across grain of the tie. I cannot now recall just exactly when and where I first saw this plate.

The second form of Goldie plate consisted of a thin flat rectangular piece of metal with a shoulder on top towards one side edge and four chisel shaped claws extending down under the plate from the four corners thereof. I cannot now recall exactly in what road and where I first saw this plate, but I did see it in a great number of roads in the early days of tie-plate business. The claws of this plate were of chisel form and cut into the tie across the grain thereof and parallel with the shoulder on top.

The third or latest form of Goldie tie-plate consisted of a rectangular piece of comparatively thin metal with a shoulder across the top near one side edge thereof and four flat triangular pointed claws extending down from the bottom of the plate not far from the side edges thereof but all of them in from the outer edge of the plate. These claws cut across the grain of the wood, and in their general position were parallel with the flange on the top side of the plate.

336 All these tie-plates had holes for the spikes and in the later forms were much thicker and heavier than the early forms, were stronger, better made and better designed as the practice and experience with the use of tie-plates in track was gained and as the experience of the rolling mills increased in the rolling and manufacturing of plates.

The last type I have seen on many roads notably the Pennsylvania Lines west of Pittsburg.

X Q. 251. Are these last forms still being manufactured?

A. I believe they are and these forms of plate of the Goldie type are almost exclusively used in hardwood or oak ties and they are better adapted and more successful on hardwood ties than they are on softwood ties. The plate with flanges parallel with the grain of the wood being a much more successful plate on soft ties.

X Q. 252. Look at the drawings, Goldie patent No. 540,356, and state whether the two lower drawings, Figs. 2 and 3, do not show a shallow groove or depression parallel with the shoulder underneath the rail position extending the length of the plate?

Mr. Brown: The objection to X Q. 177 is here repeated.

A. Yes, these drawings show a shallow depression.

X Q. 253. Mr. Wolhaupter, if a tie-plate like for instance "Complainant's Exhibit No. 15" were prolonged so as to engage with several ties instead of one, would the functions of the tie-plate itself or the different parts thereof be in any material way modified from the functions of the plate or parts thereof on a single tie? In short if you extended "Complainant's Exhibit No. 15," say to three feet length, would it modify the function of the plate or its part?

Mr. Brown: Same objection, also calling for a structure not present.

337 A. Yes, I think it would. In my opinion a plate should give comparatively clearing to the rail, comparatively little extended longitudinal bearing to the rail. The narrower the plate and the longitudinal bearing of the rail on the plate, the less the wave motion of the rail effects the same to move the plate on the tie to make the tie churn in the ballast and consequently effect the whole road-bed. This was very clearly illustrated in the early days of the Servis tie-plate when it was found that their first tie-plate three and three-quarter inches wide proved much more successful than one of their next plates six inches wide, from the fact as explained before hand that there was a narrow bearing given to the rail on the center of the tie by the narrow plate and thus the wave motion would not effect the tie, whereas on a wide plate as the wave motion passed over, the bowed rail would bear on one edge of the plate only and compress the tie into the ballast on that edge. The next instance after the load had passed and the bow of the rail would be on the opposite side of the plate placing the load on the opposite edge of the tie and depressing the tie on that edge thus producing a churning action.

Furthermore I consider that there would be much more tendency for grit and sand to be drawn in underneath the rail where the plate was very long than where it was comparatively short because the air which would rush in and fill the space occupied by the rail would in the long plate have to travel much further along the grooves in the same length of time and therefore much more rapidly than if the plate were short and where the grooves are all the same cross-section. I hope I have made myself clear but these are technical questions and it is sometimes difficult to explain all details in a few words.

338 X Q. 254. Then if you had a long tie-plate with shoulders, top grooves and under-flanges parallel with the rail so as to reach two or three ties you would cut it down lengthwise and put it on one tie only?

A. Yes, or preferably only on part of each tie.

X Q. 255. And your answer to that part of the question in which you speak about alternate depression and raising of different sides of the tie with a long plate was based on the idea of a long plate on a single tie, was it not?

A. Substantially so, but its effect would pass more or less to ties where the plate extended over more than one.

X Q. 256. And if you had a tie-plate or saw one which so far as shoulder, upper corrugations or grooves and under flanges all parallel to the rail were satisfactory you would cut it up or shorten it so that it would occupy only a part of one tie?

Mr. Brown: Objection to X Q. 253 is repeated to this question as well as to the question and answer to X Q. 254 and 255.

A. Do you mean if I as an engineer in charge of track had such a plate satisfactory to me that I would cut it up in short lengths.

X Q. 257. I mean if the configuration of the tie-plate as to shoulder, top corrugations and grooves and under flanges were satisfactory but it was made so long as to couple up two or three ties you would change it by making it so short that each plate would occupy only part of the tie?

Mr. Brown: Last objection repeated.

A. I could not consider a tie-plate having a shoulder, top corrugations and under-flanges all parallel to the rail satisfactory to me, as I do not believe that such type of plate is the best for use, but if I as an engineer was compelled to use such a plate as Mr. Reed
339 describes, I certainly would consider it very much better if I could cut such plate up in short lengths and put each piece on a tie, instead of having one long piece extending on several ties.

X Q. 258. I understood you to say that you had absolutely no interest in this suit, I mean financial interest?

A. That is right, I have none.

X Q. 259. And no interest in The Railroad Supply Company?

A. I have no interest in The Railroad Supply Company.

X Q. 260. And your patents were sold outright to The Railroad Supply Company and not on a royalty basis?

A. They were not sold on a royalty basis.

X Q. 261. Nor did you in any way guarantee either the validity or scope of the patents which you sold?

Mr. Brown: Objected to as irrelevant and immaterial.

A. No, we did not.

X Q. 262. So that you were in no way responsible for either the validity or scope of the patents in suit.

Mr. Brown: Objection repeated.

A. No.

Cross-examination of the witness Wolhaupter closed.

Redirect examination of the witness by Mr. Brown:

R. D. Q. 263. Mr. Wolhaupter, if you had a long tie-plate with shoulder, top grooves and under-flanges parallel with the rail sufficiently long to reach to two or three ties such as referred to in the latter part of your cross-examination would such a tie-plate be practicable for example on a curve in the track?

340 A. Why if the tie-plate extended over only two ties and the curvature was the common curvature used in main track it would not be too long and it would be practical, but in sharp curves it probably could not be made satisfactory. Rail joints extend over two and sometimes three ties and these are in common use on main line track but on sharp curves or side track leads it is often necessary to take special means to bend them into the form of a curve. It would be of course somewhat more difficult to bend a tie-plate but such a plate if the curve were not very great could be used without being bent.

Redirect examination of the witness closed.

Examination of the witness Wolhaupter closed.

BENJAMIN WOLHAUPTER.

And thereupon an adjournment was taken subject to agreement of counsel.

G. R. WILKINS,
Notary Public.

341 UNITED STATES OF AMERICA,
State of Illinois,
County of Cook, ss:

I, G. R. Wilkins, a notary public in and for the County of Cook and State of Illinois, do hereby certify that the foregoing depositions of Henry W. Hawley, John Howard McElroy, Edwin H. Bell, Charles F. Quincy and Benjamin Wolhaupter, were taken before me pursuant to the annexed notice at the offices of Messrs. Poole & Brown, 808 Marquette building, Chicago, Illinois, and at the Manhattan Hotel, Manhattan Beach, Long Island, beginning on Thursday, May 20, 1909, at ten o'clock, a. m., and continuing by adjournmeent from day to day until completed on Thursday, July 15, 1909, as therein appears; that the depositions were taken on the part of the complainant to be used on the hearing of a certain cause now pending in the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois, in Chancery, No. 29,294, wherein The Railroad Supply Company is the complainant and The Hart Steel Company and Guilford S. Wood, the defendants; that the parties to said cause were present at the taking of the same, complainant by its counsel, Taylor E. Brown, Esq., and defendants by their counsel, Frank F. Reed, Esq., and J. Negley Cooke, Esq., as therein appears; that before deposing the said Henry W. Hawley, John Howard McElroy, Edwin H. Bell, Charles F. Quincy and Benjamin Wolhaupter were by me duly cautioned and sworn to testify

to the truth, the whole truth and nothing but the truth in the cause aforesaid; and that said depositions were reduced to writing on the typewriting machine by me from statements of the said Henry W. Hawley, John Howard McElroy, Edwin H. Bell, Charles F. Quincy and Benjamin Wolhaupter, and the same were duly subscribed to by the said witnesses in the presence of counsel and before me.

And I do further certify that I am neither attorney nor of counsel for any of the parties to the above entitled cause, nor related by blood or marriage to either of said parties or to said counsel, and am nowise interested in the result of said cause.

I further certify that my fees as notary public and for
342 typewriting, amounting to $259.25, have been paid by the complainant.

I do further certify that the foregoing is a true record of the depositions taken and of the proceedings had before me, pursuant to the notice aforesaid, between the dates mentioned.

In witness whereof, I have hereto set my hand and affixed my notarial seal, this 15th day of July, 1909.

[SEAL.]

G. R. WILKINS,
Notary Public.

In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

In Equity. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

Notice of Closing of Complainant's Proofs.

Frank F. Reed, Esq., and J. Negley Cooke, Esq., Counsel for Defendants.

GENTLEMEN: You are hereby notified that the complainant's prima facie proofs in the above entitled cause are closed.

Chicago, Illinois, August 18, 1909.

POOLE & BROWN,
Solicitors for Complainant.

TAYLOR E. BROWN,
Of Counsel.

343 & 344 *Defendant's Evidence.*

UNITED STATES OF AMERICA,
Northern District of Illinois,
State of Illinois, County of Cook:

Depositions Taken on Behalf of Defendant, in a Suit Now Pending in the United States Circuit Court for the Eastern Division of the Northern District of Illinois, wherein The Railroad Supply Company is complainant, and the Hart Steel Company and Guilford S. Wood are defendants, at the office of Frank F. Reed and Edward S. Rogers, 708 Rector Building, Chicago, Cook County, Illinois, commencing on Monday, the 22nd day of November, A. D. 1909, at the hour of ten o'clock in the forenoon, before Kate
345 S. Holmes, a Notary Public, under and pursuant to the notice hereto annexed.

Present: On behalf of complainant, Mr. Taylor E. Brown, of counsel for complainant; on behalf of defendant, Mr. James Negley Cooke and Mr. Frank F. Reed, of counsel for defendants.

Said testimony, as by stipulation heretofore made and entered into, is agreed to be filed in duplicate and used subject to objections noted as to materiality, competency, relevancy, &c., in the cause now pending in the United States Circuit Court for the Northern District of Ohio, Eastern Division, wherein The Railroad Supply Company is complainant and the Elyria Iron & Steel Company is defendant.

EDWIN O. FAULKNER, a witness of lawful age, having been first, and before the commencement of any examination, duly cautioned, examined and sworn as by statute provided, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, age and residence?

A. My name is Edwin Ogilvie Faulkner; my age, 59; my family residence is Los Angeles, California; my office is at Topeka, Kansas.

Q. 2. Please state in what way, if any, you are connected with the Atchison, Topeka & Santa Fe Railroad Company?

A. I am manager of the tie and timber department of the system—the Atchison, Topeka & Santa Fe Railway system.

Q. 3. Please state what your duties are in that position?

A. I have control of the wood preserving plants and treatment; and I also have to look after the wear and service of ties and timber when they are placed in the track so that if any appliance is placed on them or connected to them and is the cause of damage or shortening the life of the ties or timber, it is my duty to investigate the same and see where it can be removed or modified.

Q. 4. How long have you occupied this position?

A. Since February, 1904.

Q. 5. Prior to that time state what if any connection with railroads and their operation or conduct you had had?

346 A. Well, I started railroading first of all in the old country, and with the exception of an interim of about ten years have been railroading in this country since I came over in 1871.

Q. 6. With what railroads have you been connected in this country?

A. I was with the old Great Western Railway of Canada, which is now a part of the Grand Trunk; then the government railways in the maritime provinces; then for a short time on the St. Paul, Minneapolis and Manitoba, now the Great Northern, and with the Santa Fe railway; then two years on the Pecos Valley Railway, and back to the Santa Fe again, which brings it up to the present time.

Q. 7. Upon becoming manager of the tie and timber department of the Atchison, Topeka & Santa Fe Railway system, which for brevity I will hereafter refer to as the Santa Fe system, please state whether or not you were called upon to and did make investigation relative to tie plates?

A. I did.

Q. 8. When was that investigation made?

A. Shortly after my appointment, in February, 1904.

Q. 9. What was the occasion for that investigation?

A. Complaints had been made by our officials that the tie-plates then in use were damaging the ties.

Q. 10. About how long did this investigation take you?

A. About two months.

Q. 11. Did you in connection with that investigation make a report to the officials of the Santa Fe road?

A. I did, I made two reports, one a verbal one, in which I recommended the use of flat plates in preference to those theretofore used, and then a written one in connection with an investigation of the use and service of flat plates.

Q. 12. At that time what, if any, type of tieplate or tieplates were being used on the Santa Fe system?

A. What is commonly called the flanged plate; the flanged type of plate. They went by the names of the Wolhaupter and the Glendon. We had a great many more Wolhaupters than Glendons; we didn't have many of the latter.

Q. 13. Please describe the Wolhaupter tieplate that was then being used on the Santa Fe system?

A. It had several sharp flanges under the plate of about even length which ran parallel with the tie, and no shoulder.

Q. 14. Describe the top, if you can, of the Wolhaupter tie-plate?

347 A. It was of the arched or girder type; that was the name generally given to the type.

Q. 15. Was the top flat or corrugated?

A. No, it was corrugated.

Q. 16. And in what way did the corrugations run in reference to the tie?

A. Parallel with the tie.

Q. 17. Could you tell us about to what extent the Wolhaupter tieplate was then employed on the Santa Fe system?

A. On certain parts of the system they were used more on curves than anywhere else, and on other parts of the system they were used on curves and to some extent on tangents, as well.

Q. 18. And you spoke of the Glendon tieplate as used on the Santa Fe system at this time; please describe it.

A. That is a plate very similar to the Wolhaupter, excepting that the outside flanges were longer than the inside ones, and the top of the tieplate was flatter than the Wolhaupter.

Q. 19. In what direction did the lower flanges or projections run, with reference to the tie?

A. Both top and bottom ran parallel to the tie.

Q. 20. Did the Glendon have a shoulder upon the top?

A. No.

Q. 21. Was the top of the Glendon tieplate flat, or corrugated or ribbed?

A. It was slightly corrugated,—no, not corrugated, there was slight indentations parallel with the ribs underneath, but not the round arched type of the Wolhaupter. We didn't have many of the Glendon.

Q. 22. Look at Exhibit 24, Complainant's Depositions, and state whether that represents actually or approximately the Wolhaupter tieplate that was in use in the Santa Fe system at this time?

A. No, I don't think it does. As I remember it, the flat part on—the ridges on top were round. As I remember, the corrugations on the top of the Wolhaupter tieplate then in use were rounder than Exhibit 24. It was the flanges underneath at that time which was the whole thing, and not the top.

Q. 23. Look at Exhibit 46 to Complainant's Depositions, and state what if any resemblance the Glendon plate then in use bore to this so far as the top is concerned?

348 A. That has the flatness that I referred to in connection with the Glendon plate.

Q. 24. In connection with this investigation did you visit any railroads for the purpose of examining the style of tie and plates employed by them?

A. I did.

Q. 25. Did you, among other lines, examine the Pennsylvania lines or a part thereof, west of Pittsburg?

A. I did.

Q. 26. Please state what form of tieplates if any you found in use in the Pennsylvania lines west of Pittsburg?

A. The Goldie claw.

Q. 27. Can you remember how thick it was and on what kind of ties it was employed? If you do not recall you may refer to your report. You have in your hand and are about to refer to a certain paper; please state its date.

A. Its date is April 20, 1904.

Q. 28. By whom is it signed?

A. By myself.

Q. 29. To whom is it addressed?
A. To Mr. J. W. Kendrick, Third Vice President.
Q. 30. Is this the original report which you made?
A. This is the original report itself, that I made.
Q. 31. And was it made on or about the date which it purports to bear?
A. It was made and dated on April 20, 1904, and bears his office stamp of receipt of April 23, 1904. I got it out of his files on Saturday last.
Q. 32. How soon after the investigation referred to therein was it made?
A. Probably within a week or so after I returned to Topeka from the investigation. The report and the investigation were continuous, as far as possible.
Q. 33. Now referring to the report any time that you wish to refresh your recollection, please state how thick the Goldie claw tieplates found on the Pennsylvania lines west of Pittsburg were and on what kind of ties they were employed?
A. The plate was three-eighths of an inch thick, used on oak and recently on Georgia pine.
Q. 34. Did you see these Goldie claw tieplates in actual use?
A. I did.
Q. 35. Upon what part or parts of the system were they employed, curves or tangents?
349 A. On curves.
Q. 36. Did you walk over and actually examine in person any portion of the Pennsylvania lines west of Pittsburg that had these Goldie claw tie plates, if so state what place?
A. I can make a quotation, reading from the report, if you like.
Q. 37. You may refer to the report and state.
A. With the Road Master of the first district west of Pittsburg I walked over several curves and found the plates in good shape, standing up well, and holding the gauge all right.
Q. 38. Please state what if anything you were told in this immediate connection, while you were making this investigation, by the Road Master, if anything?

Mr. Brown: The question is objected to as calling for evidence of parties not present and of whom no notice has been given of any intention to take their deposition. The question is further objected to as calling for hearsay evidence, and as incompetent and immaterial.

A. He told me he had used them for some years, saying they gave good satisfaction, they did not break or buckle, held the gauge well and he preferred them to any other kind.

Mr. Brown: I renew my objection to the answer and move to strike out both question and answer.

Mr. Reed:

Q. 39. Please state whether or not, in this connection, you made any investigation of the Pittsburg & Lake Erie railroad track?
A. I did.

Q. 40. Do you recall where you made that examination?
A. Yes, for a few miles out of Pittsburg.
Q. 41. Did you personally examine the portions of the track?
A. I did.
Q. 42. What style of tie plate was there in use on that road that you saw?
A. They were using the flat ribbed plate that was then known as the Glendon rib, and the Goldie claw, in about equal proportions, only on curves as far as I saw, and on white oak ties.
Q. 43. Did you examine these plates as they were in the track?
A. I did, as far as it was possible to see them in the track.
Q. 44. What did you find as to their condition?
350 A. I found them all in excellent shape and without any apparent difference in the service that each was giving.
Q. 45. Please state whether you were given any information as to the time when those tie plates which you saw were put in the road, if so, by whom, and what the time was?

Mr. Brown: Last objections repeated.

A. I was told by the Road Master that they were inserted in 1900, and I saw tie marking nails in the ties themselves. By tie marking nails I mean a nail with a flat head in which the last figure or figures of the year are indented, and the nail driven in as an actual identification of when the ties were put in the track.

Mr. Brown: So much of the answer as stated what was told by the Road Master to the witness is objected to for the reasons last stated, and a motion is made to strike it out.

Mr. Reed:

Q. 46. Please state what if any date or figures indicating date, appeared on these tie marking nails at this place, if you recall?
A. I can not recall whether there was one ought or two oughts.
Q. 47. What was the year indicated by the marking, if you know?
A. 1900.
Q. 48. In giving you this information which you have just described, was the Road Master with you on the track which you inspected?
A. Yes.
Q. 49. Please state what if anything the Road Master told you at the time and place of your investigation, in reference to the tie plates and their service?

Mr. Brown: Last objection repeated.

A. He said there had been no trouble of re-gauging or anything else, consequently he had no preference between them.

Mr. Brown: Objection repeated to the answer, and motion to strike out.

Mr. Reed:

Q. 50. Did you personally examine these tie plates as they were inserted in the track?

A. I did.

Q. 51. What was the condition as you saw the tie plates?

A. I described that a few answers ago. I found them in excellent shape and without any apparent difference in the service each was giving.

351 Q. 52. Did you, in this connection, examine any tracks of the Pennsylvania Railroad system east of Pittsburg?

A. I did.

Q. 53. What examination did you make and where?

A. I made examination of the tracks in the Pittsburg terminals and also on what they call the Mountain from Gallitzin to Kittanning point, that takes in the horse shoe curve.

Q. 54. Please state the result of your investigation in the vicinity of the horse shoe curve, stating what kind of tie plates you saw and what their condition was under your inspection.

A. I found flat plates standing up all right, and others in various degrees of cutting. Those which had been put on new ties within the last few years were in good shape. I found two types of tie plates there, one which I before called the Glendon rib, and another which was known as the Richards plate, and around the horse shoe curve and its vicinity I also found a few of the Goldie claws.

Q. 55. You saw all of these types of tie plates in the track in the vicinity of the horse shoe curve?

A. Yes, all the way from the tunnel down.

Q. 56. What was the condition of all the different kinds of tie plates that you saw in the track at this point?

A. Well, the condition so far as I could see, indicated that they were all right, that is, they were performing their service.

Q. 57. I wish you would describe each of the tie plates which you saw in the track of the Pennsylvania system from the tunnel down around the horse shoe curve.

A. The Glendon rib was a flat plate with a shoulder and two ribs underneath parallel to the rail and running across the tie. The Richards plate was a flat plate with a shoulder and a concavity in the middle under the plate running parallel to the rail and across the tie. The Goldie claw was a flat plate, if I remember right, with a shoulder and four chisel shaped projections on the bottom about an inch long at each corner.

Q. 58. You speak of the first plate as flat; did you refer to the top of the plate?

A. Yes.

Q. 59. You spoke of the Richards plate as having a cavity; was that on top?

A. Underneath.

352 Q. 60. What was the top of the Richards plate?

A. Flat.

Q. 61. You spoke of the Goldie claw. Could you see, from the position of the plate of this kind in the track whether the top was perfectly flat or whether there was a small cavity or hollow thereon parallel to the rail and on top?

A. I couldn't see anything in connection with the top while the

rail base was on. I saw some that had been taken out of the track at Kittanning point, but I didn't notice any indentation of any kind on top.

Q. 62. In what way or direction did the claws on the corners of the Goldie tie plate engage in the tie, crosswise or lengthwise?

A. Crosswise to the tie.

Q. 63. What do you mean by a shoulder, when you use that expression in describing these tie plates?

A. A ridge projecting above the level surface of the top of the tie plate, which the base of the rail rests against.

Q. 64. Did you, subsequent to this investigation in the vicinity of horse shoe curve, see the Road Master who had charge of that part of the division?

A. I did, the evening of the same day.

Q. 65. What was his name?

A. Ehrenfelt.

Q. 66. Did you have a conversation with him?

A. I did.

Q. 67. What if anything did he say as to the length of time that the plates at the point you had inspected, had been in?

Mr. Brown: The last objection repeated.

A. He said a lot of the plates had been in service since 1896, and others had been put on old ties to get a few more years' service out of them.

Mr. Brown: I object to the answer and move to strike it out.

Mr. Reed:

Q. 68. What was the fact, from your investigation there if you ascertained it, as to the kind of traffic and its extent on the Pennsylvania railroad near the horse shoe curve?

A. They have four main line tracks, and from the number of trains passing up and down the mountain the day I was there there seemed to be an immensely heavy business going between these points, as trains passed us almost continuously in one direction or the other.

353 Q. 69. From what you saw and know of the Pennsylvania system what would you say as to the traffic on this part of the system that you saw being heavy or not?

A. It was exceedingly heavy.

Q. 70. Did you make any other investigation of roads in the east at this time, I mean actually?

A. No.

Q. 71. To what place did you next go in your investigation?

A. I started out west on the Santa Fe.

Q. 72. And at what part of the Santa Fe did you make an investigation?

A. On the Raton mountain from Wooton to Starkville.

Q. 73. What did you do at this place?

A. I walked down the mountain between these points with the Road Master in charge of the track, his name is Van Dorn.

Q. 74. Please state whether you found tie plates inserted at this point on the Santa Fe system?

A. I did.

Q. 75. Please describe the tie plates which you saw between those points.

A. They were the Wolhaupter and Glendon type, principally the Wolhaupter, only a few of the Glendon.

Q. 76. What was the weight of the rail under which the Wolhaupter plate- were placed, if you know?

A. They had just taken out 75 pound rail and had inserted 85 pound in its place.

Q. 77. Did you ascertain how long the Wolhaupter plates under the 75 pound rail had been in use?

A. Only two years.

Q. 78. What was the condition, if you can describe it, of the Wolhaupter plates at that place?

A. Those that had been taken out, which came off the 75 pound rail, were there along side the track in heaps and after examining a number in each heap I estimated that eighty per cent. were unfit for further use on account of being broken or badly buckled; they were 3/16 of an inch thick.

Q. 79. What if anything was said to you by the Road Master as to the effect of the flanged plates on the ties?

Mr. Brown: The last objection is repeated.

A. The Road Master complained about those flanged plates damaging his ties.

354 Mr. Brown: I object to the answer and move to strike it out.

Mr. Reed:

Q. 80. And what if anything did he say?

A. He said the strips of wood between the flanges soon broke off from the tie and the plate becoming loose pounded on the wood below and bruised it so that when the plate was changed the tie had to be adzed down to solid wood.

Mr. Brown: Same objection to the question and answer and motion to strike out.

Mr. Reed:

Q. 81. When you speak of flanged plates of which the Road Master complained, what kind of a plate do you refer to?

A. It was the plate I described first with long sharp flanges parallel to the tie on the under part of the plate.

Q. 82. And known as what?

A. And known as the Wolhaupter and the Glendon. There were two types of Glendon, one was the Glendon rib which I before spoke of, and the Glendon flange. These were the Glendon flange.

Q. 83. Did you see any ties at this place, either in the track or

that had been taken out, and examine them to see the effect which the tie plates had had on them?

A. I did.

Q. 84. What was their condition?

A. I saw ties taken out solely on account of the trouble that the Road Master described and complained of, those were then along side the track.

Q. 85. Could you see where tie plates had been inserted in these ties?

A. Yes.

Q. 86. And could you tell what kind of a tie plate had been inserted in them?

A. I could tell it was a flanged tie plate.

Q. 87. Now what was the condition of these ties that you saw that had had the flanged tie plates in them?

A. They were not of any further use on account of the solid wood being completely destroyed where the tie plate and rail base had been.

Q. 88. Well, how was it destroyed?

A. In the way that the Road Master described. I found plates there with the pieces of the wood between the flanges and underneath the unsound, dozy wood, which apparently had been pounded on and caused to come in that condition.

355 Q. 89. Did you notice any ties there on which two tie plates had been placed?

A. Yes, I did. That was done for the purpose of trying to keep the track in gauge on their ten degree curves. On some of the big ties they had put two tie plates alongside one another, but even that was not sufficient; a re-gauging had been to such an extent that I saw rows of plugs two inches long outside the flange of the rail; by these plugs I mean tie plugs that had been put in the -pike holes and then re-spiked.

Q. 90. What did that indicate?

A. Indicated that the track had been spreading or getting out of line.

Q. 91. And what was the reason, if you know, that the track got out of gauge or line at this point?

A. Well, it was on a heavy curve, they were pine ties and the tie plate had failed to hold the track in gauge.

Q. 92. In what direction of the tie did the tie plates at this point on the Santa Fe system run?

A. Parallel with the tie.

Q. 93. Where did you next go in this investigation?

A. To Las Vegas.

Q. 94. Did you make an examination of the Santa Fe tracks there?

A. No, I don't think I was out over the track at Las Vegas. It is a big division point and they were in the habit of hauling their old ties to the round house and using them for engine fuel, and with the Superintendent of the division I went up to the round house and looked over some large piles of ties which had been taken out of the track recently.

Q. 95. I wish you would state whether, from your examination of these ties, you could tell whether or not tie plates had been inserted in them at any time?

A. I could.

Q. 96. What kind of tie plates were they?

A. They were the flanged type.

Q. 97. What was the condition of these ties that you saw?

A. They were so badly used up that they had to be taken out of service.

Q. 98. Could you tell, from your examination of the ties at this place what was the cause of the destruction of the ties which rendered them unfit for further use?

A. The flanges of the tie plates.

356 Q. 99. Were you advised, and if so by whom, when these ties that you saw had been inserted in the track?

Mr. Brown: Same objection as last made.

A. I found 1900 marks on the ties themselves.

Mr. Reed:

Q. 100. And what was the condition of the ties that bore this 1900 mark?

A. They were in the wood pile; of no further use as ties.

Q. 101. In consequence of what?

A. In consequence of the damage caused by the tie plates.

Q. 102. Did you see ties there at that time with any other year marked in them?

A. I did.

Q. 103. And what years were those?

A. I saw some with the marks of 1885, 1886 and 1888.

Q. 104. What was their condition?

A. Well, they had come out from rot, but I contrasted them at the time with the service given by the 1900 ties which had come out on account of tie plate wear.

Q. 105. The '85, '86 and '88 marked ties had not had any tie plates?

A. No.

Q. 106. At this point did you have any conversation with Road Master Dan Elliott?

A. I did.

Q. 107. What district did he have?

A. He had the district between Las Vegas and Albuquerque.

Q. 108. Did you have with you at the time you saw him, a tie plate?

A. I did.

Q. 109. Please describe it?

A. It was one of the Glendon ribs which I have spoken of as having been used on the Pennsylvania, east, and then Pittsburg and Lake Erie, and which I got from Dilworth Porter Company's office in Pittsburg. It was a flat plate with a shoulder and two ribs underneath running parallel to the rail and across the tie.

Q. 110. When you say flat, you mean the top on which the rail base rested was flat?

A. Yes, was flat.

Q. 111. Did you show that to Dan Elliott?

A. I did.

357 Q. 112. Did he say anything at that time of having purchased and used on the road tie plates of that general form?

Mr. Brown: Last objection repeated; also as leading.

A. He said he had used some of this same type of tie plate and had them then in his track.

Mr. Brown: Same objection to the answer and motion to strike out.

Mr. Reed:

Q. 113. Please state when if ever he stated that he had used them?

Mr. Brown: Same objection.

A. He told me he had put them in in the fall of 1892, and explained where they had been put in at that time and where they were at the time he was speaking.

Mr. Reed:

Q. 114. Please state when it was he said they had been first inserted and where they were at that time?

Mr. Brown: Same objection.

A. He said they were first inserted on a four degree curve west of Sulzbacher, under 66 pound rail; that they had been taken out from there in the spring of 1900 when the 66 pound rail was replaced with 85 pound, and had been inserted in a six degree curve a few miles west of Las Vegas where they then had some 66 pound rail in the track.

Q. 115. Do you recall whether he stated how many of them there had been originally?

A. He said originally there had been one thousand, but a number of these had broken in the meantime and there was approximately half that number only in service.

Q. 116. Now at what time was this conversation with Elliott?

A. This would be in March, 1904, probably.

Q. 117. What did you then do, if anything, in reference to an inspection of the track for these plates?

A. I took a hand car next morning and went out there myself with the section foreman in charge of that section and found 451 still in the track.

Q. 118. State their condition?

A. Eighty-four of them were broken all in the shoulder and the rest were in apparently good condition.

Q. 119. What if anything did Mr. Elliott say as to the breaking?

Mr. Brown: Same objection.

A. He said they had broken because the metal was not thick enough, it was only 3/16 of an inch thick.

358 Q. 120. What if anything did you do in reference to getting specimens or samples of those plates at that time?

A. I took two plates out of the track, and a tie that one of the plates had rested on.

Q. 121. Look at the piece of tie which I now show you and identify it if you can?

A. That is the piece of a tie that I had cut at that time.

Mr. Reed: This may be marked Defendant's Exhibit A.

Q. 122. Where has this tie, Exhibit A, been kept since that date?

A. In my office, in Topeka. It has been brought up to Chicago on one or two occasions for inspection of our officials but I have taken it back to Topeka and it has remained there in my cabinet.

Q. 123. And what have you to say as to its condition compared with what it was when you took it out?

A. It is in the same condition.

Q. 124. Look at the tie plate which I show you and which may be marked Exhibit B, and identify this plate if you can?

A. That is the plate that was on that tie.

Q. 125. What is the condition of this tie plate as compared with what it was when you found it and took it out?

A. Just the same condition. I may say, I took that tie out to show the action of the rib on the wood.

Q. 126. In whose possession has this tie plate been?

A. It has been in my possession. As I say, it was sent up to Chicago on two or three occasions when the investigation was up in 1904, but I took it back to Topeka and it has been in my office ever since.

Q. 127. Did you at that time take out any other of the plates?

A. I did.

Q. 128. Look at the plate which I now show you, which is marked Exhibit C, and identify it if you can?

A. I do identify it.

Q. 129. And is that one of the plates that you took out of the track?

A. It is.

Q. 130. Then these two plates and this piece of tie were taken out by you from the Santa Fe track at what point?

A. On the curve I have spoken of, three or four miles south of Las Vegas.

Q. 131. And when?

359 A. In probably March, 1904. I say probably, because I started on the investigation in February and continued it up to the time of making the report on April 20.

Q. 132. And in whose possession has the tie plate Exhibit C been?

A. It has been in my possession until I sent it to Chicago two or three weeks ago.

Q. 133. I wish you would state whether Mr. Elliott, in this con-

nection, showed you any copy of any letter which he claimed to have written in connection with the thousand tie plates that he told you about?

Mr. Brown: Objected to as incompetent, irrelevant and immaterial.

A. He did.

Mr. Reed:

Q. 134. Look at the letter press impression book which I show you, and which may be marked Exhibit D, and state when if ever, you first saw it?

A. I first saw it on the evening when we were discussing this matter and he told me he had these thousand tie plates in the track, in his office at Las Vegas, at that time.

Q. 135. Well, in whose office?

A. In Mr. Elliott's office.

Q. 136. You know his hand writing?

A. Yes, I do.

Q. 137. Refer to page 416, state if you can, in whose hand writing the copy of the letter and signature are?

A. That is in Elliott's writing.

Mr. Reed: This letter, marked Exhibit E, I will read into the record, as follows:

"LAS VEGAS, 1/25-3.

"Charles Dyer, Esq., Supt.

DEAR SIR: I will need for the year '93, 7,500 tie plates 61# and 8,500 tie plates 66#. I received one thousand plates short time ago, I think they are called the Potter plate. I consider them far superior to the Servis plate for curves.

Yours truly, D. ELLIOTT, *R. M.*"

Mr. Brown: The letter read by counsel into the record and referred to by the witness is objected to as irrelevant, incompetent and immaterial to any issue joined in the case.

Mr. Reed:

Q. 138. What if anything did Dan Elliott say to you on
360 this occasion as to the one thousand tie plates mentioned in this letter, being the tie plates which you saw in track and of which you took these two specimens?

Mr. Brown: Former objection as to the conversation is repeated.

A. He spoke strongly in favor of the rib plates as against the flanged ones from his own experience, but thought we ought to have them punched in the way the Pennsylvania plates were.

Mr. Brown: The answer is also objected to and motion is made to strike out.

Mr. Reed:

Q. 139. What I meant was, whether Dan Elliott at this time said

anything to you about what tie plates those were, the thousand mentioned in that letter?

Mr. Brown: Same objection.

A. He said they were one thousand plates that were sent him in the fall of '92 for testing purposes and came from, as he remembered, Dilworth Porter, and that he had put them in the track at the time near Sulzbacher and when the 66 pound rail was taken up they had been transferred to other 66 pound rail near Las Vegas where I found them.

Mr. Brown: Same objection to the answer.

Mr. Reed:

Q. 140. What is the condition of Exhibit C, tie plate, at the present time, as compared with the time when you first saw it and took it out of the track?

A. It is exactly in the same condition.

Q. 141. From your experience in tie plates and their use, what would you say as to the side bearings on the top surface of Exhibit C, on each side of the shallow depression or groove having been worn down to any extent by actual use?

A. They show clearly that they have been worn down by the rail base.

Q. 142. Where did you next go in your investigation, if any place?

A. I went west as far as Winslow.

Q. 143. Did you examine the track there?

A. No, I did not, but I saw the Road Master.

Q. 144. At what point did you next go?

A. I next went to Williams.

Q. 145. What road master did you see there?

A. Road Master Johnson, who had that district in charge.

Q. 146. Is there any heavy grade or mountain in that district?

A. Yes, that district includes the Supai mountain from near Williams almost down to Ash Fork, to Fairview.

361 Q. 147. Did you make any examination of the track at this point?

A. I did, down the mountain.

Q. 148. About how far did you walk, do you suppose?

A. Oh, off and on, in patches.

Q. 149. Did you find any tie plates there?

A. I did.

Q. 150. What variety?

A. I found the flanged plates.

Q. 151. Did you make an examination of them in the track?

A. I did, yes, with the Road Master.

Q. 152. When you say you found flanged tie plates, what variety do you mean?

A. Well, the variety that was then known as the Wolhaupter or the Glendon. Of course there were other flanged plates outside

of those two made but with us they were known more as the Wolhaupter because we bought more of that particular type.

Q. 153. Then did you see any Wolhaupter flanged plates at this point?

A. Well, I saw some flanged plates, and I assume they would be Wolhaupter.

Q. 154. What was their condition?

A. I found a number broken and buckled, but not to so severe an extent as on the Raton mountain.

Q. 155. What was the condition at this point where you saw these tie plates as to grade and curve?

A. Well, they have on the mountain a two and a half per cent. grade with numerous ten degree curves.

Q. 156. Did you find any other kind of a tie plate at this point?

A. Yes, I found a few that had been put in for a test.

Q. 157. What were they?

A. Well, I think it is what is called the Fox plate, but I would not be quite sure on that point.

Q. 158. Have you described it, or have you a specimen of it?

A. The specimen is outside. (Tie plate produced by counsel.) As I remember, it was a plate something of that kind, with flanges underneath.

Q. 159. Please describe it.

A. This isn't the one that I saw, but I simply hold to that as being something the same kind that was there in the track.

362 Mr. Reed: That may be marked Exhibit F.

Q. 160. What was the condition of these plates like Exhibit F, as you saw them in the track on the Supia mountain?

A. I found the plates standing up all right.

Q. 161. Did you find any flanged plates inserted in the track near the plates like Exhibit F?

A. Yes, I found several broken flanged plates alongside there.

Q. 162. Where did you next go on your investigation?

A. I proceeded on west towards the coast.

Q. 163. And where was the next investigation if any, that you made?

A. On the track?

Q. 164. Yes.

A. On the Southern Pacific.

Q. 165. At what point?

A. North of Bakersfield, in the vicinity of Delano, north and south.

Q. 166. What kind of tie plates did you find at this point, if any?

A. I found two flat tie plates in use, and a large number of flanged plates.

Q. 167. Can you describe or have you specimens of the flat tie plates that you found in the Southern Pacific at this point?

A. Yes (producing tie plate). That is it. I found what is known as the Sacramento plate, perfectly flat top and bottom, with a slight bevel and shoulder, it is called the Sacramento plate because it was made in the Southern Pacific shops at Sacramento.

Mr. Reed: The plate witness refers to is marked Exhibit G.

Q. 168. Is this a plate that you actually procured at this time and place?

A. It is.

Q. 169. And has been in your possession since?

A. Ever since.

Q. 170. And is in the same condition?

A. Yes.

Q. 171. Please produce and identify, if you can, any other tie plate that you procured at this time and place.

A. I also found some of what they called the channel plate, which is a perfectly flat plate top and bottom, with the sides
363 turned down approximately half an inch, and round spike holes.

Mr. Reed: The plate referred to and produced by the witness is marked Exhibit H.

Q. 172. Did you procure this specimen at that time and place?

A. I did, and it has been in my possession ever since.

Q. 173. And is in the same condition, I presume?

A. It is.

Q. 174. Did you find on the Southern Pacific in connection with these plates, and other kinds of tie plates?

A. Yes, I found and saw a number of flanged plates.

Q. 175. What was the condition of the flanged plates that you saw in the Southern Pacific track at this point?

A. I found many of them broken and a good many ties which had gone in the same way as described for our own, with the flanged plates.

Q. 176. What if anything did the Road Master and section foreman state in reference to the action of the flanged plates on the Southern Pacific?

Mr. Brown: Objected to for the same reasons as previously stated.

A. They both stated that they had noticed that the flanged plates injured their ties and that they preferred the flat ones for use, and when any of the flat ones came off old ties they were put back again as they were not furnished at that time with any more new ones.

Mr. Brown: Same objections as to the answer and motion is made to strike out.

Mr. Reed:

Q. 177. Did you subsequently examine any other part of the Southern Pacific track, if so, state where it was?

A. I examined their track south of Los Angeles on their main line to El Paso.

Q. 178. Who went with you if anybody?

A. The Road Master in charge of the district?

Q. 179. When was the track built, if you know?

A. It was built in the—it was the second track, they had double track there for the line and this second main line track was built

in the year 1895 with Sacramento flat plates on new red wood ties, 62 pound rail.

Q. 180. What was the nature of the business that passed over it, if you know?

364 A. Being their east-bound main line to El Paso, they necessarily had a heavy business passing over it.

Q. 181. Did you examine any portion of the track to see the condition of the tie-plates?

A. I did.

Q. 182. These were the flat plates?

A. Yes, the Sacramento plate.

Q. 183. Like Exhibit G?

A. Yes.

Q. 184. What was the condition of these tie-plates?

A. Well, fully 95 per cent. of the original plates were still in the track and the few I saw broken were at the shoulder.

Q. 185. What kind of ties were used?

A. Red wood.

Q. 186. Did you examine any of the ties taken out of this track upon which the Sacramento plates had been used?

A. Well, we examined a lot of ties recently taken out of track but not, possibly, out of that particular track. As I say, this was a new second main line, there with a lot of ties alongside the track which had been in service in the old main line, and those were examined.

Q. 187. Well, did some of them show that a flat tie plate had been used on them?

A. They did.

Q. 188. What was their condition?

A. The wood under the flat tie plates was firm and sound.

Q. 189. Did any of them show that a flanged tie plate had been used?

A. They did.

Q. 190. And what was their condition?

A. The wood was quite gone under the tie plate.

Q. 191. When you have spoken of flanged tie plates in your testimony up to this point, in what direction did the flanges engage the tie?

A. Always parallel on the tie.

Q. 192. Did you make any other examination of any portion of the Santa Fe track?

A. I did I examined a piece of track in our Topeka yard.

Q. 193. Were there tie plates there?

A. There were some Goldie claws on pine ties.

Q. 194. What was their condition?

A. They were all in good condition and standing up all right.

365 Q. 195. Did that practically complete your investigation, so far as tracks were concerned?

A. It did.

Q. 196. As a result of this investigation and report did you recommend any type of tie plate?

A. I did, I recommended a flat top tie plate with a shoulder and two ribs underneath.

Q. 197. Have you a blue print of it prepared at that time?

A. I have (handing counsel paper). That is it.

Q. 198. Look at the blue print marked Exhibit I, and state what it is, if you can?

A. That is a blue print of a tie plate which I recommended for use in connection with my report. It is dated May 5, 1904.

Q. 199. Referring to the blue print, Exhibit I, in what direction did the projections on the lower side run with reference to the tie?

A. Across the tie, parallel to the rail.

Q. 200. And the top had a shoulder and a flat bearing surface?

A. Yes.

Q. 201. Was your recommendation adopted?

A. It was not.

Q. 202. What was the form of tie plate preferred by the officials of the Santa Fe subsequently.

A. A flat plate without the ribs underneath and with fluted grooves on top.

Q. 203. Have you a blue print of that?

A. Yes, that is it (handing counsel paper).

Q. 204. Look at Exhibit J, and state what it is?

A. It is a blue print of the flat plate which was adopted shortly after my report was made, and put in use on the system, this tracing being dated June 28, 1904.

Q. 205. Were tie plates for the Santa Fe road actually made in accordance with this blue print.

A. They were.

Q. 206. By whom were they supplied?

A. I believe by Mr. Benjamin Wolhaupter, who then represented the,—I think the correct name was the Independent Railway Supply Company.

Q. 207. Do you know whether he or this company manufactured or procured the manufacture elsewhere?

A. I believe they procured the manufacture elsewhere.

366 Q. 208. Do you know to what extent tie plates of that form were used on the Santa Fe system?

A. Oh, we used a large number, for that plate was standard on the Santa Fe from 1904 up to 1908.

Q. 209. Did you prepare, in connection with your report, or obtain a drawing of the Sacramento tie plate?

A. I don't remember. I think I simply obtained the plate, but I found that drawing in among the papers of the Sacramento tie plate, —in among my papers.

Q. 210. Is it a correct representation of the Sacramento tie plate?

A. It is, so far as I can see.

Mr. Reed: This is identified as Exhibit K.

Q. 211. While you were investigating in this manner did you obtain from the Pennsylvania roads any drawings or blueprints showing the tie plates in vogue in that system?

A. I believe I did.

Q. 212. Have you those blueprints?

A. There are the two blueprints, but I haven't a distinct recollection of getting them at the time. They are, however, the Pennsylvania blueprints.

Q. 213. And you obtained them in connection with this investigation, at some time?

A. I wouldn't be sure on that point.

Mr. Reed: These are marked Exhibits L and M.

A. I never expected to have to come up on any of these things in 1904,—and——

Q. 214. Well, what do these blueprints show?

A. The blueprint marked 56773, Exhibit L, shows the Richards plate; and the blueprint 56518, Exhibit M, shows the Glendon rib plate, both of which the Pennsylvania, east, were using at the time I made the inspection on their track.

Q. 215. Did you see the plates corresponding to these drawings in the track?

A. I did, both of them, as near as I could, as near as it is possible to see them while in track.

Whereupon an adjournment was taken to 2 o'clock P. M. of the same day.

367 November 22, 1909—2 o'clock p. m.

Met pursuant to adjournment.

Present as before.

Direct examination of Edwin O. Faulkner continued by Mr. Reed:

Q. 216. Look at the tie plate now shown you and which is marked Exhibit M[1], and identify it if you can, and state how, if in any way, it is related to any of the drawings or blueprints shown in evidence by you?

A. Of course this is not a service plate, it is a model, but it is identical with the drawing Exhibit M, to which I referred as the Glendon rib, in use on the Pennsylvania, east.

Q. 217. I wish you would examine the tie, or segment of tie already referred to in my testimony as Exhibit A, and state whether the checking or splitting therein is, in your judgment, in any way due to the action of the tie plate thereon?

A. You mean the splitting down here (indicating)?

Q. 218. Any of the splitting.

A. No, that hasn't anything to do with the tie plate. Might be a piece of wood was sawed and had died out. That piece also has split off since (witness places his finger on the cavity between the tie plate and end). That has split out since the section was cut out of the tie. This piece here I remember, in Topeka I was going to put a tack through it to tack it on.

Q. 219. I wish you would state whether, as the tie was in the track

the end beyond the exterior end of the tie plate was longer than is now shown?

A. Yes.

Q. 220. About how much?

A. The tie was originally eight feet long and it would project on the outside of the tie plate probably fifteen or sixteen inches.

Q. 221. After the adoption and use by the Santa Fe system of the tie plate shown by Exhibit J, was there any other kind of tie plate used by the Santa Fe road, if so please describe it.

A. There was. About a year after this plate was put in service, complaints came from the Supai mountain district that they
368 couldn't hold their track in gauge with that flat bottom plate, with the plate shown as Exhibit J, and they asked for some plates of the pattern I first recommended, namely Exhibit I. 100,000 were thereupon purchased from the Sellers Company but of a different type than this, what is commonly called the Waffle plate.

Q. 222. Look at the tie plate now shown you and marked Exhibit N, and state whether or not this is a sample of the Waffle plate last referred to?

A. Yes, that is a sample.

Q. 223. Of this kind 100,000 were ordered?

A. I think it was 100,000, although it may have been 200,000; but it was one or the other of those figures.

Q. 224. And were those installed on the Santa Fe system?

A. They were, and as that was not the type that had been asked for, prices were asked from some of the manufacturers for the type marked Exhibit I, and either 100,000 or 200,000 bought from the John Sellers Company of that design, Exhibit I, and sent out to the particular district that had asked for them.

Q. 225. What if any reason was assigned in the complaint that came in, in reference to the plate Exhibit J, as to its being inadequate in permitting the track to spread or get out of gauge?

Mr. Brown: Objected to as immaterial.

A. Simply that there was nothing to—well, it would slide with the spike on the tie, and there was nothing which helped to hold it accurately in gauge.

Q. 226. That is, there was no projection of any kind on the bottom?

A. No.

Q. 227. Do you recall whether any other style of tie plate was ordered and used on the Santa Fe system after your report, except the styles shown by Exhibit J and Exhibit M[1] and Exhibit I, down to the adoption of the style of tie plate shown by Exhibit D to the bill of complaint?

A. There were some experimental tie-plates in connection with screw spikes put in the track at different times between these types, but I do not know of any other than the experimental screw spike ones.

Q. 228. Can you describe these experimental plates last referred to, if so, you may do it.

A. Well they were flat plates, flat top plates, I think some
369 with the fluted grooves and possibly some without, and bosses around the holes to support the back and sides of the screw spike head and I believe they also had the ribs underneath parallel to the rail.

Q. 229. What as to shoulders?

A. And all of them had shoulders. Since we started the use of this class of plate we have invariably used the shoulders.

Q. 230. When you say that some of these experimental plates had fluted grooves in some of them, do you refer to the top or bottom of the plate?

A. I refer to the top. I refer to the same general design as Exhibit J.

Q. 231. With the addition of anything on the bottom?

A. Probably they had ribs parallel to the rail, but of that I would not be positive. They were experimental plates in connection with screw spikes.

Q. 232. Look at the aluminum model tie plate which is marked Exhibit O, and examine the drawings of letters patent 538,809, B. Wolhaupter, tie plate, May 7, 1895, and state whether in your judgment that aluminum model represents the construction shown in the drawing?

A. I should say it does, giving a cursory examination.

Q. 233. Did you ever see in your investigations and examinations of tracks and tie plates, any tie plate in actual use that conformed either actually or substantially to that model?

A. No, I never have.

Q. 234. Look at the aluminum model tie plate which is marked Exhibit O^1, and examine the drawings to Letters Patent 691,322 B. Wolhaupter, Railway tie plate, patented January 14, 1902, and state whether that model, in your judgment, represents the construction shown in the drawing?

A. In a general way I should say that it does.

Q. 235. Did you ever see, in your investigation, or at any time till you saw this, a tie plate that was identical or substantially like Exhibit O^1?

A. No, I never have.

Q. 236. Look at the aluminum tie plate model which is marked Exhibit O^2, compare it with the drawing shown attached to specifications of Letters Patent 721,644, B. Wolhaupter, Tin Plate,
370 patented February 24, 1903, and state whether, in your opinion and judgment, this aluminum model shows the construction exhibited in figures 2, 3 and 4 of the drawings?

A. Yes, I should say it is the same, practically.

Q. 237. Did you ever see a tie-plate in actual use, or intended for actual use, of that form or substantially like it?

A. I never have.

Q. 238. Look at the aluminum model tie-plate marked Exhibit O^3, compare it with figures 6, 7 and 5 of the last named Letters Patent, and state whether, in your judgment, the model correctly exhibits the designs exhibited in the drawing, figures 6, 7 and 5?

A. In a general way, looking hurriedly over it, yes I should say that it resembles the cuts.

Q. 239. Have you ever seen a tie-plate in actual use, or intended for actual use, of that form like Exhibit O^3?

A. I have not.

Q. 240. Look at the aluminum model marked Exhibit O^4, compare it with figure 8 of the drawings of the last named Letters Patent, state whether it exhibits the design set out in that drawing?

A. I should say it does.

Q. 241. Have you ever seen a tie-plate in actual use, or intended for actual use, of that form?

A. I have not.

Q. 242. When did you for the first time see tie-plates of the forms exhibited by the aluminum models, O to O^4, inclusive?

A. On Saturday last, in your office.

Q. 243. In your judgment, from your investigation of this subject, your experience and observation, is there any objection to tie-plates of the forms shown by these models, as practical tie-plates for actual use, if so, state what it is, and your reasons, referring to the different exhibits.

A. It might be possible to use these tie-plates, but the tie would have to be specially prepared for them on account of the wide space, or on account of the width of the top of the groove in the bottom.

Q. 244. I wish you would state what the fact is, as shown by these models, as to the way in which the projections from the lower surface engage the tie, in all of them?

A. Parallel to the tie. It would, of course, have the same objection, and probably a greater objection than the Wolhaupter design which we are acquainted with?

371 Q. 245. For what reason?

A. Because I think this would be very much more difficult to insert in the tie, and do as much damage to the tie as the other. I never saw a plate like that, Exhibit O.

Q. 246. Now, what do you say as to Exhibit O^1 and its practicability?

A. Yes, that plate might be used, but it would be probably not as difficult to insert in the tie as Exhibit O, and yet it would be as unsatisfactory, even more so, than any of the others, on account of the depth of the flanges, which are parallel to the tie, and also the additional lugs in between.

Q. 247. What have you to say as to the form, Exhibit O^2 as a practical tie plate?

A. That would need forcing into the tie with a machine. The power might do it in time, but in the meantime the plate would be raised so high from the tie that it would be detrimental to the track itself.

Q. 248. And what would you say as to the form Exhibit O^3?

A. It is practically the same as the previous one.

Q. 249. As to the bottom, you mean?

A. Well, I don't recognize very much difference between those two in the bottom.

Q. 250. I say, as to the bottom?

A. Yes, as to the bottom. This could be gotten into the tie but it would need special apparatus for that purpose, Exhibit O^3.

Q. 251. And what about Exhibit O^4?

A. And the same in regard to that.

Q. 252. You do not, in speaking in reference to these aluminum models, make any comment or criticism on the difficulty of construction or rolling.

A. No, I don't know about that.

Q. 253. I believe, Mr. Faulkner, you were absent for a time in 1907, or was it 1906?

A. 1907, and the first three months and a half of 1908.

Q. 254. Where did you go briefly?

A. I went for a trip around the world, investigating, in the one-half of the trip, timber and timber conditions; that would be in the Hawaiian Islands,—you want that, I suppose?

Q. 255. No, just in a general way.

A. Timber conditions, then in Europe investigating why
372 they get a longer mechanical life out of their ties creosoted than we do in this country.

Q. 256. Well, it was on business of the company that you were absent?

A. Yes, sir.

Q. 257. On your return did you find any work going on in the office of Mr. W. B. Storey, Jr., Chief Engineer of the road, in reference to tie plates?

A. I did.

Q. 258. I wish you would state whether you were consulted by him and advised as to the work, and what part, if any, you took in it?

A. When I returned Mr. Storey told me that he was in the middle of tie plate designing, and it would be necessary for me to stay and take part in the same as far as I could, which I did.

Q. 259. About what period did this work in the office of Mr. Storey consume, so far as you were engaged in it?

A. Well, I got back about the middle of April, 1908, and I was here probably a week or ten days at that time, then I went on west to see my family, and came back again and he was working on it and I was assisting as far as I could for some time, until well on in the summer, off and on, I was.

Q. 260. Well, when you returned, to what stage in the work had Mr. Storey progressed? Did he exhibit any drawings of tie plates?

A. Yes.

Q. 261. If so, describe them as well as you can.

A. Well, he had a number of studies and different plans, or different designs that he was trying to work out, all of them with a shoulder, and different patterns on top of the plate; and I urged at the same time that he should add the ribs underneath parallel to the rail and across the tie, telling him our experience in the past and

that I believed now we were going to a new type of tie plate and a larger one, that these ribs should be included.

Q. 262. What is your judgment, as the result of your investigation and experience in tie plates, as to the desirability of ribs on the under surface parallel to the rail and crosswise of the tie?

A. I believe they are an advantage in helping to hold the track in gauge and preventing the lateral side thrust.

Q. 263. I wish you would state, as a result of your investi-
373 gation and experience in this matter, the relative advantage or disadvantage of ribs crosswise of the tie and parallel to the rail, and projections or ribs that are parallel to the tie and crosswise of the rail.

A. Well, in the first case they are against the grain of the wood, and in that way have a very strong opposition to any lateral movement. In the other, they are parallel with the grain of the wood, and practically the only resistance in the grain would be at the ends of the ribs and whatever friction there might be in the sides.

Q. 264. As to the effect on the tie of these different forms of construction, what is your judgment as to that?

A. The depth that I have advocated for the cross ribs, in my opinion, does not damage the tie. They are comparatively shallow, not more than a quarter of an inch deep, and shaped more like the letter "V," but with not such a sharp ending at the bottom of the letter.

Q. 265. And what is the effect on the tie of the flanges or ribs that are parallel to the grain of the tie and crosswise of the rail?

A. Well, so far as our experience is concerned, it has not been satisfactory.

Q. 266. And what are the results as shown by your observation and experience of flanges parallel to the tie?

A. All the flanges that I have seen, that we had in use, rather were the deep flanges, practically all the same length and in the course of time they would become more or less embedded and then the result was that the wood between the flanges broke off, and acted more in the shape of a hammer blow to the wood that was below it, which is a short time made it dozy and not sound.

Q. 267. What if any effect had the tie plates with the lower projections parallel to the grain of the tie in allowing water to get in and rot or disintegration to ensue?

A. Well, of course, the water would get in easier around the edges of the plate, and meeting with wood which was not in a sound condition the decay would start all the quicker for that reason. Of course nearly all the ties we had were treated ties, and our observation was, of course, based on the ties we had in the track.

Q. 268. Did the flanges or lower projections that were in the tie plates that you employed parallel to the grain of the tie actually penetrate the tie, go into its fibre?

A. Yes, that was the intention.

374 Q. 269. And was it the actual result?

A. Very largely, yes. There were cases where the flanges did not go wholly into the tie and would leave a slight space in which

the tie plate would stick up. It all depended on how they were put in.

Q. 270. In your observation of the use of tie plates where the lower projections were crossways of the tie, did the cross ribs or flanges in any way injure the wood of the tie?

A. I did not see any cases where the injury had taken place.

Q. 271. Well, did these flanges, so far as your observation had gone, actually penetrate the wood of the tie?

A. Not in the same way that the others penetrated it. It would, more in a way of compressing the fibre, rather than cutting a groove.

Q. 272. Now, in your observation, which form of tie plate, the one with the lower projections crosswise of the tie and parallel to the rail, or the one with the lower flanges parallel to the grain of the tie and crosswise of the rail. the better resisted the lateral movement of the rails or spreading of the track?

A. You must understand that my observation of these ribbed plates was confined to the investigation in 1904, and in that I was largely taking the experience given me by the trackmen that used the cross rib, and from that time until the cross rib plates were made by Sellers, we had none in our track excepting those thousand that were put in in New Mexico, and there I only saw a few of the ties. I examined all on those ties and I saw no indication whatever of respiking on account of gauge, and I asked the section foreman at the time for his experience, just in the same way that I asked those on the eastern lines. Since then we had those made by the Sellers Company and I have also asked the Road Master whether those plates overcame the trouble that he had previously reported with the perfectly flat plates, and he told me it did.

Mr. Brown: So much of the answer of the witness as repeats conversations or results of conversations, or inferences from conversations with other persons, is objected to as hearsay and not responsive to the question, likewise as incompetent, irrelevant and immaterial.

Q. 273. Now I am going to ask you, confining your answer to your own observation and experience down to date, which form of tie plate is more effective in preventing the lateral movement
375 of the rail, the one with the under projections or ribs crosswise of the tie, or the one with the lower projections lengthwise of the tie?

A. The crosswise of the tie.

Q. 274. Basing your answer upon reports which you have obtained in your investigations on this subject, which form of tie plate is more efficacious in preventing lateral movement of the rail, the one with the lower projections crosswise of the tie, or the one with the lower projections lengthwise of the tie?

Mr. Brown: Last objection repeated.

A. Crossways of the tie.

Mr. Reed:

Q. 275. Do you know what form of tie plate was the result of the

work of Mr. Storey, as he was assisted by you in the spring and summer of 1908?

A. There were three forms.

Q. 276. Did you see, at the time the work was completed, the drawings and blue prints that were produced by Mr. Storey?

A. I did.

Q. 277. Look at the blue prints which I will mark Exhibits P and Q, and identify them, and state what they are, if you can.

A. These are the drawings that I saw Mr. Storey working on; that is, these are the results of the studies and drawings that I saw Mr. Storey working on.

Q. 278. Now did you at any time while engaged in Mr. Storey's office, or with Mr. Storey in this work, see any aluminum tie plate models furnished by anybody in connection with that work?

A. Oh, he had a number of models there, but I don't know who furnished them at all.

Q. 279. Well, were there any aluminum ones, that you remember?

A. I don't remember. There may have been, I wouldn't say there were not, but there were a lot there and I don't know that I paid any particular attention to what was aluminum and what was steel.

Q. 280. Look at the tie plate which is now shown you, which is marked Exhibit R, and state whether in your opinion this tie plate is one of the forms shown in the blue print drawings which you have just identified as Exhibits P and Q, prepared by Mr. Storey?

A. It is.

376 Q. 281. Now, prior to the time of the preparation of these blue prints by Mr. Storey, did you ever see a tie plate like the one which you have just identified, which is marked Exhibit R? Did you ever see that form of tie plate?

A. Not with the ribs at the bottom, but one something after the same general design on top. Not probably the same dimensions in different ways, but the same general design on top.

Q. 282. Now what was the nearest tie plate in general form, embodying all the elements that you had previously seen to the tie plate Exhibit R?

A. Well, with the exception of the lower ribs I saw a drawing or blue print of the Southern Pacific, and I next saw it in Mr. Bell's office when he had a book of tie plate drawings before him and we were looking over the different designs together, and I said then, "there is a plate that looks like or is the same as the Southern Pacific new flat plate." And he said it was and that the Southern Pacific had started making them themselves, but on their attention being called to the fact by them that it was a patented plate, they had taken out a license for those that they had made, and stopped making them.

Q. 283. When was that?

A. That I couldn't tell exactly. After this tie plate investigation I used occasionally to run up to Mr. Bell's office when I was in town; he was always glad to see me, and we had kindred subjects to discuss, and I couldn't exactly say what time that was. Of course it was before I made that long trip abroad, and I left Chicago then in August, 1907.

Q. 284. I didn't ask you in my question as to blue prints or forms of plates, but actual plates themselves, and I was coming to that question later, but since you have answered it I won't go over it again. I mean the tie plates themselves, taking into consideration every element, shoulder, top and bottom, what was the tie plate, in your judgment, the closest to Exhibit R, that you saw?

A. This one, Exhibit C.

Q. 285. And that Exhibit C is one of the tie plates that you took from the Santa Fe track?

A. Yes, in 1904.

Q. 286. Now I wish you would compare tie plates Exhibit R and Exhibit C. and state wherein the resemblances exist.

A. Well, they both have shoulders; they both have ribs on the bottom; Exhibit C has one groove or depression across the
377 middle of the top, while Exhibit R has two across the plate on the top.

Q. 287. And how do all of those grooves run on both?

A. Parallel with the rail and across the tie.

Q. 288. And how does the single groove on the top of Exhibit C compare in its direction with the lower projections or ribs?

A. They are all parallel to the rail and across the tie.

Q. 289. And what is the condition in that regard in Exhibit R, of the top grooves and the lower ribs?

A. They are all parallel to the rail and across the tie.

Q. 290. What was the report, if any, by Mr. Elliott, as to the satisfactory operation of the one thousand plates of which you have produced two samples here, Exhibits B and C?

Mr. Brown: Objected to as incompetent, the report will speak for itself; it is calling for hearsay.

A. Elliott believed strongly in the ribbed plates as against flanged ones, solely from his own experience, he said.

Mr. Brown: The answer is objected to for the same reason, and motion is made to strike it out.

Mr. Reed: Counsel for defendant offers in evidence each and all of the exhibits referred to in the testimony of the witness, being Exhibits A to M and M^1, inclusive, and N to R, inclusive, including O, O^1, O^2, O^3 and O^4.

Mr. Brown: The offer of the exhibits is objected to as irrelevant and immaterial.

Counsel for complainant requests the counsel for defendants to see that the transcript of the deposition of the witness, and all other witnesses whose depositions are taken in shorthand or stenographically is furnished to him within a reasonable time succeeding the session at which the deposition or part of the deposition is taken, in accordance with the general custom prevailing in this circuit at this time when depositions are taken stenographically, and that if the same Notary is to be used at all of the sessions and all of the depositions are to be taken stenographically, suitable recesses or adjournments be had to give the Notary the opportunity of transcribing her notes between the sessions, so that counsel may be fur-

nished with a copy of the proceedings from time to time as the examination of witnesses proceeds.

Mr. Reed: To which request counsel for the defendant responds that he will be pleased to have the Notary furnish such transcript as soon as she can without unduly intrenching upon her nervous and physical system; but that counsel for defendant does not
378 propose at the end of the examination of every witness in chief to adjourn the examination in order that the record may be written up. If counsel for complainant cannot cross-examine an ordinary witness without having the evidence written up, there had better be additional counsel retained in the case. There is no such custom prevalent. Witnesses placed upon the stand and examined orally in the presence of the court are cross-examined instantly, and in all depositions which it has been the fortune of counsel for the defendant to cross-examine in, with the exception of depositions taken down upon the machine, the cross-examination has proceeded immediately upon the close of the testimony. In the present instance witnesses are all busy men, the present witness has come a great many miles and his duties are pressing upon him and it is practically impossible that he wait over till the testimony is written up.

Cross-examination by Mr. Brown:

X Q. 291. Mr. Faulkner, you have stated in your direct examination that you collaborated with a Mr. Storey in preparation of drawings for tie plates; do you mean the Mr. Storey who has been sitting here during your deposition, who is now present in the room?

A. I do.

X Q. 292. Are you present at this hearing in response to a subpœna, or do you come voluntarily as a witness?

A. I come voluntarily, being notified by Mr. Reed.

X Q. 293. You were requested to come here by Mr. Reed?

A. Yes.

X Q. 294. From your office at Topeka?

A. Yes.

X Q. 295. And you have been here since Saturday in this matter?

A. I got here Saturday forenoon, yes.

X Q. 296. Is Mr. Reed connected with the Santa Fe system?

A. I could not say. I don't know all the attorneys that our general solicitor may appoint or engage.

X Q. 297. But when you got word from Mr. Reed to come, you came right along, is that it?

A. Yes.

X Q. 298. Prior to receiving this notice from Mr. Reed that you were wanted here for this purpose, had you received any
379 notice or instructions from any official of the Santa Fe road to attend these sessions, or to attend on Mr. Reed's notification?

A. Yes, I was advised by some of our people that the hearing would take place and that I would be required as a witness.

X Q. 299. Whom do you mean by "some of our people?"

A. I think it was Mr. Collins, his name was signed to the bottom of a letter. He is the general purchasing agent.

X Q. 300. Is your department under his charge?

A. No.

X Q. 301. Separate departments, are they?

A. Separate departments.

X Q. 302. Was he the only one of the officials of the road to notify you that you were wanted on this matter?

A. At this time, yes.

X Q. 303. Well, who at any other time?

A. Not for any hearing. This is the first hearing that I have been asked to attend.

X Q. 304. But what other officials at any other time notified you that you might be wanted?

A. Mr. W. E. Hodges, who was then the general purchasing agent.

X Q. 305. And he is now connected with the road, is he not?

A. And he is now the Vice President of the road.

X Q. 306. So that your presence here at this present examination is with the full knowledge and consent of the officials of the road, is it not?

A. It is.

X Q. 307. And if you should be detained a few hours longer, or a day or two longer on this business, it would make no difference as far as their consent is concerned, you are here by their direction, are you not?

A. Well, I am sure I wouldn't be instructed to leave without getting through, but at the same time I don't want to stay any longer than is actually necessary.

X Q. 308. I han't keep you any longer than necessary. I just wanted to know whether this is your personal business that is being interfered with, or whether you are here by and with the consent of the officials of your road.

A. It is not my personal business that is being interfered with.

X Q. 309. Prior to February, 1904, when you started in
380 on this investigation to which you have been testifying, what actual experience had you had with maintenance of track and tie plates and things of that sort?

A. For about four years I had been assistant to the General Manager of the Santa Fe at Topeka, in charge of what is called Joint Facilities; that is, if you allow me to explain——

X Q. 310. That is what we want; want it for the Court, not for me, you understand.

A. In charge of Joint Facilities, that is, the joint operation of tracks and terminals owned by one company by another company, and that included both maintenance and operation.

X Q. 311. That is the four years that you were employed with the Santa Fe prior to this interim you spoke of in your direct testimony?

A. Well, I was employed by the Santa Fe before that, but that was the four years immediately preceding my transfer to this new department, which was in February, 1904.

X Q. 312. Now when you were with the Great Northern road which afterwards became part of the Grand Trunk system——

A. Great Western.

X Q. 313. Great Western——

A. Yes.

X Q. 314. —which afterwards became part of the Grand Trunk system, did you have anything to do with tracks and track devices and tie plates and things of that sort?

A. There were no tie plates in those days.

X Q. 315. And I will ask you about this government road which you had to do with, the same question.

A. There were no tie plates there.

X Q. 316. And did you have any experience with tie plates and track devices on the road that became a part of the Great Northern, that is now the Great Northern?

A. No.

X Q. 317. During the time that you worked there?

A. No.

X Q. 318. What is the date when you saw a tie plate for the first time, that you remember, anywhere, at any place?

A. That I could not give you. I could only in a general way say that it was probably in connection with the work that I was transferred to in this Joint Facilities.

381 X Q. 319. That is, it was some time perhaps during the period of 1900 to 1904?

A. Well, I may have seen tie plates before that, but it would be in a general way, I not having any responsibility or connection with them.

X Q. 320. You had no occasion from a business point of view, to look into that matter, and if you saw them it was only accidentally, you might say?

A. That was all.

X Q. 321. Then I take it that your first official, you might say, or business knowledge of tie plates was when you began that investigation along in February, 1904?

A. In a close and critical way, yes.

X Q. 322. What was the purpose of making that investigation?

A. Reports had been made by the general managers that our ties were being ruined by the type of tie plates which was then in use, and this new department had just been formed when these reports were made, and the circular forming the department included in it not only the control and management of the wood preserving works, but also the life of the ties and timber in the track or any damage that might be done to them by any device put on it or used in connection with them, so that it became my personal duty then to watch anything of that nature.

X Q. 323. You spoke of making a verbal report as well as a written report, as the result of your two months' investigation in 1904; to whom was that verbal report made?

A. To Mr. J. W. Kendrick, who was then the Third Vice Presi-

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dent, and to whom I reported verbally before I made the investigation.

X Q. 324. And it was at his instruction that you prepared a written report?

A. This verbal report was followed by a recommendation that we should put in a flat tie plate, which was a great departure from the plate that we had up to that time used. When I made the suggestion, with Mr. Dun, who was then the Chief Engineer of the system, Mr. Kendrick said that before adopting it he would like an investigation made of the use of that type of tie plate by other roads, and mentioned the fact of the Pennsylvania using practically a flat plate and a cutting into of some ties in the Pittsburg terminals, and directed me to make such investigation, go where I heard or found flat tie plates were being used and give the result of
382 use as I saw them or could get information, and that was why I started in on the Pennsylvania.

X Q. 325. And this report that you made was a written report of the result of this investigation?

A. Exactly.

X Q. 326. And that is the report which you referred to and had in your hand during your direct examination?

A. It was the original report that I made to him in April, and bears my signature on it.

X Q. 327. Is there any objection to putting that report in the record as part of your deposition?

A. Well, it was never written for that purpose. It is up to the attorneys to say what should be done.

Mr. Brown: Complainant's counsel requests defendants' counsel to state whether or not he will furnish a copy of the original report for the purpose of being attached to the deposition of this witness?

Mr. Reed: If you want to offer it in evidence, do so.

Mr. Brown: Complainant's counsel wants the Court to know exactly what document the witness held in his hand and used while he was testifying.

X Q. 328. Please produce the document that you have been reading from, which you call your report, that the same may be introduced in evidence as Complainant's Cross Exhibit Number 1.

Mr. Reed: There it is. If counsel wants the report and wants to introduce it in evidence he can do so.

Mr. Brown: I call for it and ask it be marked as Complainant's Cross Exhibit No. 1.

Mr. Reed: Do you introduce it?

Mr. Brown: I want to see it first.

Mr. Reed: You won't see it until you introduce it in evidence.

Mr. Brown: I have a copy of it.

Mr. Reed: All right, offer it in evidence then, if you know what it is.

Mr. Brown:

X Q. 329. Mr. Faulkner, is the report which you have been reading from and referring to in your direct examination, printed on eight typewritten pages?

A. It is.

X Q. 330. Does the report contain in its first paragraph the following words: "Complaints having been made that our flanged tie plates were not giving good service and in addition were
383 injuring the ties, a flat plate was recommended as preferable?"

Mr. Reed: Please note that counsel for the complainant produces a paper and reads from it.

A. It does.

Mr. Brown:

X Q. 331. Are you willing to let me see that original report?

A. If the attorneys for the other side say that it is proper and necessary and advisable, yes.

Mr. Reed: Counsel for the complainant having stated that he has a copy of the report, there seems to be no necessity for inspection, and it is therefore declined.

Mr. Brown: Complainant's counsel makes formal demand for the production of the document called a report, which the witness has present and which he has read from and referred to during the giving of his direct examination, and requests that the same be marked Complainant's Cross Exhibit No. 1.

Mr. Reed: To which defendants' counsel responds, first, that complainant's counsel having, in some mysterious way succeeded in obtaining a copy of the private papers of the Atchison, Topeka & Santa Fe Railroad Company, and having declared that it is a copy of the report, there seems to be no necessity for the production of the original, but, nevertheless if complainant's counsel will offer the same in evidence it shall be produced, and go in evidence.

Mr. Brown:

X Q. 332. Please look at the copy which I now show you, copy of a document, and compare it with the copy which you have been referring to and called your report, and state whether or not it is a copy so far as the typewritten portion of the document which I hand you is concerned. There are some memoranda in red ink on the margin, but I am not asking you about them.

A. If I have got to identify this copy I must compare it.

Mr. Reed: Have you any objection to Mr. Storey and he going into the next room and comparing it?

Mr. Brown: Let them compare it here, read it right out.

Mr. Reed: Have you any objection to Mr. Storey and he doing it in the next room?

Mr. Brown: Surely I have, I want him to do it right here on the witness stand.

A. All right, if that is the——

Mr. Reed: You don't have to unless you want to.

A. Oh, well, then, it is no use taking up time and reading in the way that I would have to read it.

384 Mr. Reed: You can compare it that way or you can take it and go into another room and compare it, if you want to.

Mr. Brown: He can't leave the witness stand.

Mr. Reed: Well, he can leave the witness stand if he wants to, and go into another room and compare it.

A. I want to be perfectly fair, Mr. Brown, I am under oath, if I have got to compare this I would like to compare it in a way that I can squarely tell you whether it is the same. I don't want to take advantage of you or anything else. Nothing in it to me for that purpose.

Mr. Brown:

X Q. 333. You decline to compare it right here at this time and place?

A. (Witness looks at both papers.) Yes, as far as I have examined, I believe that is a copy of my report.

Mr. Brown: Complainant's counsel, again calls for the production of the original report and offers the same in evidence as Complainant's Cross Exhibit No. 1, Faulkner Report of 1904, and the same is copied into the record as follows:

Mr. Reed: Counsel for defendants consents to the production and offer of the report and directs the same to be handed to the stenographer and Notary, and by consent of counsel the same is copied into the record as follows:

Tie Plates—Flanged versus Flat. (F)

TOPEKA, KANSAS, April 20, 1904.

Mr. J. W. Kendrick, Third Vice President, Chicago, Illinois.

DEAR SIR: Complaints having been made that our flanged tie plates were not giving good service, and in addition were injuring the ties, a flat plate was recommended as preferable.

Upon the matter being referred to you for approval, a decision was held in abeyance, and you directed me to visit the leading roads using such plates, in order to see by personal observation how they looked in the track. This I have done, and beg to report as follows:

Pennsylvania Lines West of Pittsburgh:

Their standard plate is the Goldie claw, 3/8" thick, used on oak and recently on Georgia pine ties. They are set under the rails and the power imbeds them which they claim is quickly and easily done. They are only used on curves. With the Roadmaster of the first district West of Pittsburgh, I walked over several curves and found the plate in good shape, standing up well and holding the

385 gauge all right. He has used them for some years, and says they give good satisfaction; they do not break or buckle, hold the gauge well, and he prefers them to any other kind.

Pittsburgh & Lake Erie:

This road has the flat ribbed plate and the Goldie claw in about equal proportions, used only on curves and on white oak ties. I examined a lot of plates of each kind laid in 1900 on new ties; they were all in excellent shape, without any apparent difference in the service each was giving, and the Roadmaster said there had been no trouble over regauging or anything else, consequently he had no preference between them. The ties had marking nails on and the track was in first class condition.

Pennsylvania R. R., East:

As all the tracks in the Pittsburgh terminals have been renewed within the last two years, I could not see the one you spoke of in the condition reported. I saw the Roadmaster in charge, and he stated that prior to the renewals, the plates on some of the yard tracks had cut in a good deal; but they had been put on old ties, adzed down, and even then the plates lengthened their life by two or three years. He had seen flanged plates used some years ago on Chestnut ties on the Northern Central, but they had damaged the ties and were discarded. Excepting on curves in this yard, the only place where they have plates on this district is near Braddock, where the ribbed kind has been in use for about seven years; two years ago the ties were renewed, and the old plates used on the new ties. In that time less than one per cent. have broken or been damaged. Up to June last the Pennsylvania, East, used two kinds of flat plates,—the ribbed one and that one we know as the "Richards" plate. I found a difference in opinion of the trackmen as to which is the best; some claim the ribbed one, because it helps to hold the track in gauge and keeps the plate from sliding on the tie under the rail, while others said the "Richards" would do this just as well; but all agreed that a flat plate was the best, and did not want one with flanges or claws on. Until about two years ago the two plates were used in about equal proportions, and as both have the same appearance on top, it was impossible to distinguish between them when under the rail.

Mr. Richards, the Chief Engineer, having heard of my mission, sent word he would like to see me about it, and I saw him in Philadelphia. He strongly favors flat plates, claim- they are least destructive to the tie and best adapted for their purpose. He
386 said they used a number in the Philadelphia terminals, but as these also had been renewed within last two years, it would not be a fair test. He gave me a letter to the Roadmaster on their mountain district between Gallitzin and Altoona, where they had more plates in use to the mile of track than on any other part of the road, and under the hardest kind of service. I went to Gallitzin, and with the Assistant Roadmaster, spent a full day on the four tracks between the tunnels and Kittanning Point, which takes in the Horseshoe surve. I found flat plates standing up all right, and others in various degrees of cutting; those which had been put on new ties within the last few years were in good shape; others had cut in level with the ends of the plates, some so far imbedded that a box was formed around the plate, while a few were completely sunk below the level of the tie, making a deep box with its attendant disad-

vantages. Two of the four spike holes in the plate are intended for "adhesion spikes," holding the plate to the tie to prevent it from rattling, while the other two hold the plate to the rail and in gauge. There were plates without adhesion spikes, and others with the spikes only partially down, so that many plates were loose; in addition to this, there were a number of them not placed so as to get the maximum benefit, the rail only touching the shoulder at a corner, but this was afterwards explained as owing to the plates used not fitting the base of the rail. I was over four or five different sections and looked on each for broken or buckled plates, but found only a few which were evidently broken by derailments. At Kittanning Point, I saw some Goldie claws in the track; some all right, others broken and claws off, and a few in the scrap pile taken out for cause. At one time they had quite a few of these in, but say they have been taken out on account of giving way. Very little could be learned while walking the track about how long the plates had been in which were imbedded, as no records are kept; one foreman was away on leave; one or two were recent appointments, and one who had been on for several years seemed not to know where he had made comparatively recent renewals; whether on account of short memory or for other reasons, I could not say. The fact that the ties where the plates were so deeply imbedded were pretty far gone was the only mitigating condition.

In the evening, Mr. Ehrenfelt, the Roadmaster, returned, and I told him what I had seen. He said a lot of the plates had been on since 1896, and others put on old ties to get a few more years' service, which was being given. He said that up to a few
387 years ago plates were not so generally used on the Pennsylvania as now, and when they came into more general use a number went on old ties so as to prolong their life as much as possible. He believed any plate narrower than the face of the tie would in course of time sink in and make a box, more especially if the tie had been in service a long time, and to overcome this, their Roadmasters at their meetings during the last year had been discussing the advisability of recommending widening the plate from six to eight inches so as to cover the tie, leaving the length (nine inches) as at present, and he believed this would yet be done: also that it must be remembered the four tracks I examined had probably heavier train service than on any similar length of main line track in the country, as trains and light engines were passing over it almost continuously day and night, and if this was taken into consideration he was sure no other plate would do what those now in use were doing. I quote what he said because of the conditions found. They are now getting Georgia pine ties and expect to put plates on tangents as well as on curves.

I saw Mr. Rodd in Pittsburg and gave him your letter. The Pennsylvania officials east and west gave me every assistance, but one of them said that this report, so far as the Pennsylvania Railroad was concerned, was for the benefit of our own Company and should not be given to other Companies or outsiders.

I could not learn of any other roads using flat plates in the east,

but have since been advised that the ribbed plate has been used on a part of the Boston and Maine, with Georgia pine ties, for the last nine years, and has given good satisfaction.

The only road in the west using flat plates that I know of is the Southern Pacific, and these are on soft wood ties. As I had not heard of any complaints from the Western Grand Division or the Coast Lines about our flanged plates, before closing this investigation I thought it better to go west, see the Southern Pacific plates and at same time ascertain conditions on our own line.

At Mr. Cain's suggestion I walked the track down the Raton mountain from Wootton to Starkville, with Roadmaster Van Dorn, and found conditions so far as tie plates are concerned needing special attention. Whatever conclusion may be come to in reference to this matter as a whole, I believe some other kind of tie
388 plate than that now furnished should be used on this mountain track. There were several thousand Wolhaupter and Glendon (principally Wolhaupter) plates for 75 lb. rail (between two and three miles) recently taken out where 85 lb. rail was put in; these had only been in service two years, yet I am well within a safe limit when I say that eighty per cent. are unfit for further use on account of being broken or badly buckled; they were 3/16" thick, and I believe cost over five cents each; this plate is too light for the power used on this mountain, and a ¼" plate is being supplied for the 85 lb. rail. The Roadmaster also complains about these flanged plates damaging the ties; he says the strips of wood between the flanges soon break off from the tie; and the plate becoming loose pounds the wood below and bruises it, so that when the plate is changed the tie has to be adzed down to solid wood; the next time this has to be done, and gives way, it must come out. I saw 1900 ties taken out, not for rot, but on account of this trouble, and some 1902 ties, while still in service, were in same fix. They are also unable to keep track in gauge on the ten degree curves. I saw ties with rows of plugs two inches long; on some wide ties they had put on two tie plates, but notwithstanding all their efforts the track pulls over so that a lot of time is taken up in this regauging, which I think could be saved. The Section Foreman corroborated these statements on their own account. The Pennsylvania people hold the horse-shoe curve in line with the flat ribbed plate, and they should be tried here. I would also suggest trying the Goldie claw on one or two of the curves, especially if the makers would lengthen it a little behind the outside spikehole. The 3/16 flange plate should not be put in track where we run heavy power; if they have to be used at all, it should be on Branch Lines.

Mr. Van Dorn said the same conditions would be found on the side of the mountain, and that outside of the question of damaging ties, if he could be furnished with plates which would hold track in place they would save money in labor.

At Las Vegas Mr. Easley and I found 1900 ties in the roundhouse wood pile taken out of track on second district on account of tie plates cutting; this will soon reduce our life average. In same pile there were 1885, 6 and 8 ties which had lasted until now. Here

I saw Roadmaster Dan Elliott, who has the Glorietta mountain in his district. Without telling him of the experience elsewhere, he simply corroborated what has already been said as to damage to ties, etc., so that I need not repeat. When I showed him the rib-
389 bed plate I brought from your office, he remembered that in the fall of 1892 one thousand of these were sent him to put on trial. They were first laid on a four degree curve west of Sulzbacher under 66 lb. rail; when this was replaced by 85 lb. in the spring of 1900, all that were sound were taken up and relaid on a six degree curve west of Las Vegas, where we still have some 66 lb. in track and where the plates have had a severe test. I took hand car and went out to where they were in track; there are 451 still in, of which 84 are broken, all in the shoulder. Mr. Elliott said this was where they all broke, the metal not being thick enough—it being only 3/16 thick. So that you might see the effect of the plate and ribs on the ties I had two taken out; one treated in 1888 had been nearly twelve years in the track when the plate was put on it, and you can see how it looks now after another four years' service under a rib tie plate. I got this one specially to show the wear of the plate on an old tie. The other tie was treated and put in track in 1900, the plate going on it at that time. I selected this because I had just seen 1900 treated ties in the wood pile, their service ended by reason of flanged plates. So as to be sure, I verified the date when these plates were first put in service, as the fall of 1892, by tissue copy of a letter written by Mr. Elliott to Superintendent Dyer, advising him of the receipt of them and where put in. Elliott believes strongly in the ribbed plates as against flanged ones, solely from his own experience, but says we should have them punched in the way the Pennsylvania plates are. His brother who is Roadmaster east of Las Vegas also wants a flat plate, and says he believes it would be better without the ribs.

Proceeding west, at Winslow, I saw Roadmaster Gabriel; he said he liked the Wolhaupter; had not noticed any damage to the ties and while a few plates broke, it was because they were not heavy enough for the power. He says his division is largely light curves and tangents, so that they get -east usage.

At Williams I saw Roadmaster Johnston, who has the district with the Supai mountain in it; he also complains about damage to ties and plates breaking, giving exactly the same explanation as Roadmasters Van Dorn and Elliott. I went down the mountain to Fairview with him and saw a number of broken and buckled plates, but not nearly so bad as on the Raton mountain. He has two and one-half per cent. grade, with numerous ten degree curves; here I also think the ribbed and Goldie claw plates should be
390 used. On the way down I saw one of the section foremen. Without knowing what his Roadmaster had said, he also made the same complaints about the flange plates. On this mountain I found twenty of another kind of plate inserted in 1900 as an experiment. I had one taken out for examination, and send it with this; you will see it is cracked. This plate happened to be on an untreated tie; had it been otherwise, I think the sharp flanges would

have been eaten to some extent by the zinc chloride. The plates were standing up all right, but I don't like them for treated ties. There were several broken flange plates alongside them.

At Kingman, I met Roadmaster Hendren and he rode with me to the Needles. He likes the Wolhaupter, and had not noticed any damage to the ties from flanged plates; says those which have broken were after five years' wear. He said however that on many of the red wood ties west of the Needles, the rail had buried the flanged plates two inches below the level of the ties.

On the Southern Pacific I found two flat plates in use, but the same size—seven inches and one-half wide by nine inches long, rolled in their own foundry at Sacramento from old iron rail and scrap; one, called the channel plate, has the sides turned down about half an inch, and the other, called the Sacramento plate, has a shoulder and a bevel of 5/64 of an inch the width of rail base, thus canting the rail in to this extent. Each plate has a flat bottom. In the hope of saving time going to San Francisco, Mr. Shepard's office wired the Southern Pacific people, asking where they had these flat plates in; it was two days before answer came stating they had a number at Delano, north of Bakersfield. I went up there, the Roadmaster of the district going along, and found the two Southern Pacific plates interspersed with almost every kind of flanged plates made. The Sacramento plate used up here seemed to have a defect in the rolling, as I found a number broken, all in one place near the shoulder, a clean break as though a weld had given way; the Roadmaster said this was the great and only trouble with this plate, not in its design but in its make; for this reason he preferred the channel plate which was all right and gave the best of satisfaction. The ties were originally all red wood, but in recent renewals Texas pine and Oregon fir ties are beginning to show up. There was nothing but tangent track to be seen, and in the old ties (1895) the plates had cut in sometimes over an inch; but the majority was not more than I should expect to find on old red wood; the Road-
391 master could not tell when these plates were put on; as they broke, flanged plates were substituted, these being the only kinds now furnished; but when he could get flat plates they were used in preference. I found many broken flanged plates and a good many ties still in track which showed they were going in same way as our own. There were about 150 ties alongside track taken out on account of a derailment; on a number of these a flat plate had been on one end and a flanged on the other; in the majority of such cases the wood under the flat plate was sound and solid, even though it might be cut in, while at other end the fibre seemed to have become disintegrated and without strength or elasticity. Both the Roadmaster and the Section Foreman stated they had noticed that the flanged plates injured their ties in this way. I brought back one each of the two kinds of plates for inspection.

On my return to Los Angeles, Mr. Shepard's office had heard of another piece of Southern Pacific track with flat plates on the second main line a short distance south of Los Angeles. I got hold of their Roadmaster and went down there. This was the

best piece of plated track I had seen anywhere, and in best condition. It was built in the beginning of 1895, with Sacramento flat plates on new red wood ties, 62 lb. rail. Being their east-bound main line to El Paso, a heavy business passes over it, but the power is not so heavy as ours. There must be fully 95 per cent. of the original plates still in track, and the few I saw broken were at the shoulder and from same trouble as those at Delano. The plates had cut in about ¼ of an inch, excepting on the outside of a six degree curve, where it was ½ inch; even this is a good showing on redwood ties in nine years. Here the flat plates had been taken from under the inside rail, on account of sliding on the ties, and pushing curve out of line; this the Roadmaster said was the only objection he had to strictly flat plates; they would not hold track on curves of this radius. Flat plates are not now furnished so that when one broke a flanged one was put in. We examined a lot of ties recently taken out of track; the wood under flat plates was firm and sound, while under a few of the flanged plates it was quite gone; on others again, it would be better. The Roadmaster said unquestionably the flanged plate was a detriment to the tie, and while it was now standard on the Southern Pacific, he believed they would in time come back to the flat one, slightly modified in make and design. He liked their channel plate best of all and used all he could get hold of in preference to any other. On pine ties such as western roads are
392 now getting he thought a plate eight inches wide, or ½ inch wider than their old flat plates, would yet be adopted.

In our old freight track lead at Topeka, I found a few Goldie claw plates on pine ties, which had been put in for trial four or five years ago. They are all standing up and have scarcely cut into the ties at all.

While advocating the flat plate, I have endeavored to make this investigation strictly on its merits; where any one has favored flanged plates I have so stated, and why. There is no theory in this. I have described just what I saw on the track itself, and the man directly in charge of maintenance in each case has been with me. One trouble with the flanged plate we have used in the past is that they were too thin; a heavier one is now furnished, but whether this is yet sufficient it is too early to determine; if it should not be, then we will have a repetition of the past, and in any event the heavier the plate the greater the cost. Again, the flanged plate has not always been properly applied. The best plan of course is with a machine before tie goes in track; with our treated ties, full of water at the plant, this cannot be done, and on the track it is not done; in many cases the traffic is expected to imbed it, but it only does this to a certain extent; in others, the plates are channelled in with more or less success, but not always to the benefit of the tie. It is easy to issue instructions as to how they should be applied; it is harder to get it done, especially when changes in foremen are constantly occurring. Further, the treated ties eat away the sharp flanges of the plate. This is not the fault of the plate, but it is a condition which we must consider. With this I send you a plate two years on a treated tie, and another same length of time on an

oak tie not treated. The difference is great; true, this may be an extreme case, although I could have picked up a dozen just as bad. It is the extremes we must provide against. If we use a flat plate it should be heavy enough to withstand the hardest usage and with surface sufficient to cause minimum cutting to the tie. This will cost money at the start, but it would be economy in the long run, for ties and plate. Again, should it be flat or ribbed, there are advocates on both sides. Mr. Mudge thinks it should be flat; while admitting his opinion should be properly considered, I think it should be ribbed. I do not think the ribs would hurt the tie, or the tie the ribs. You have a ribbed plate before you with eleven and one-half years' usage on treated ties, and two pieces of ties, one twelve years old when the plate was first put on it. Next, should there be two spike holes in shoulder, or one? For
393 tangents, one on each side would be sufficient but this would necessitate rights and lefts; this Mr. Wells says would suit him best all around, as he is now only putting one spike on each side on curves of all degrees. If Mr. Mudge thought this sufficient for the Raton mountain curves, this spiking might be best. I am afraid two spike holes in the shoulder where the strain comes might weaken it. If there was enough stagger we might put one spike hole in center of shoulder, and two on inside, and not have rights and lefts; three spikes could then be used on curves where necessary, none of them being in a direct line. I attach prints of a ribbed plate and a flat one, so that in the final decision each can be considered. I have provided for a 5/64 inch cant on each, as I believe it should be there; and more than one of the trackmen agreed that it is a good thing. One spike hole each side is shown, but this may need to be changed to suit general conditions.

As Mr. Hodges is in a hurry for a decision, and my recommendation is quite a departure from the plates now in use—costing also more money, I have taken the liberty of sending copy of this report to Mr. Dun and to each of the General Managers, with a request that they submit their criticisms to you as early as possible.

Yours respectfully,

E. O. FAULKNER.

CC. JD
" HUM
" AGW CC. WCN

Mr. Brown:

X Q. 334. At or about the same time that you were making your investigation of tie plates and the condition of ties, in February, 1904, were there not others making similar investigations for your road?

A. Not for our road that I know of, but for themselves in connection with the complaint that had been made by our road, yes.

X Q. 335. Who were they, if you remember?

A. They were Dilworth Porter people. Captain Charles Stein and for the Railroad Supply Company Mr. Frank C. Webb. I was with Mr. Webb for a day in Texas.

X Q. 336. And do you know whether or not Mr. Benjamin Wolhaupter was making a similar investigation about that time?

A. I do not. I know that Mr. Wolhaupter was offering suggestions, but I do not know that he went out on the road making an investigation of conditions on the track.

394 X Q. 337. Were any of those suggestions of Mr. Wolhaupter made to you?

A. No, they were made to Mr. Hodges.

X Q. 338. Mr. W. E. Hodges, you mean?

A. Mr. W. E. Hodges, I believe. Let me put in, I believe they were made, because that is my understanding.

X Q. 339. Now will you please describe again and with as much detail as possible, the exact form and size of tie plate that was being used on the Santa Fe system at the time you were making this investigation, and if there was more than one type of tie plate being used, then describe with similar detail each of those types.

A. Practically the only examination I made was the one referred to in my report, and that was written at the time and was as much in detail as I could give it at this time after five years.

Mr. Reed: Pretty nearly six?

A. Yes, nearly six.

Mr. Brown:

X Q. 340. Then, so far as you know, in February, 1904, there were no tie plates used on the Santa Fe system other than those described in your report, Complainant's Cross Exhibit No. 1?

A. I speak of the Wolhaupter and the Glendon; I believe there were also some Servis plates used, but what others or to what extent I really don't know. We were then more accustomed to designate them by the Wolhaupter plate than anything else. There had been some Glendons used as tests.

X Q. 341. But you didn't examine, at the time you made the investigation prior to your report, any Servis tieplates in use on the Santa Fe, did you?

A. I think the first time I took more the statements that were already in the office, and didn't go out on the road to any extent until this investigation brought it out, until this report.

X Q. 342. That is to say, if I understand you, by the expression "the first time" you mean that the verbal report was made largely from documentary date that you secured in the office?

A. Yes.

X Q. 343. And that when a written report was required then you went out on the road and made this two months' investigation?

A. The written report was required from the fact that a flat tie plate had been recommended, and I was then directed

395 to make such investigation as was necessary to determine the success of the flat tie plate. This investigation was not alone for the purpose of determining the extent of damage to the ties, but those matters came up in connection with it.

X Q. 344. So that, as I understand it then, your investigation was not made merely for the purpose of ascertaining what tie plates

were in use on the Santa Fe, but was made because of this recommendation for the use of flat bottom plates?

A. That was the primary start of it, and of course as the two were to a certain extent one depending on the other you absolutely couldn't separate the two propositions.

X Q. 345. Well then, as I understand you, at the time you made this investigation, beginning in February, 1904, you of your own knowledge, at that time knew of the use by the Santa Fe road or Santa Fe system, of what you call the Glendon plate and what you call the Wolhaupter plate?

A. Yes.

X Q. 346. And you believe some Servis plates were also in use in that connection?

A. I may not have known of the Servis plates at the very commencement, but I did know of the Glendon and the Wolhaupter, and the Servis would follow as a matter of information.

X Q. 347. Now about this Glendon plate that was in use at that time. Has there been introduced in evidence here a sample of that plate?

A. You mean the Glendon flange?

X Q. 348 Yes, that was in use on the Santa Fe system at that time?

A. No, I haven't seen it.

X Q. 349 And there is no drawing here that was introduced this morning, of that particular plate?

A. No.

X Q. 350. You did refer to a drawing in Complainant's Exhibit number 46?

A. Yes, that resembled the Glendon, as I knew the Glendon at that time.

X Q. 351. That is as near as you recollect the Glendon plate, this Exhibit number 46?

A. This has a flat grooved surface instead of the rounded surface of the Wolhaupter; this has a flat surface on the top.

X Q. 352. In other words, this Exhibit 46 which is an illustration of a tie plate, resembles the Glendon plate as you then knew
396 it, or as you recollect it so far as the top surface is concerned?

A. Yes.

X Q. 353. That is to say, it had some grooves or corrugations or depressions in the top surface, and between those depressions were flat spaces?

A. Yes.

X Q. 354. And what was the bottom of that Glendon plate?

A. The bottom of the Glendon plate then had four flanges parallel with the tie, the two outer ones being longer than the two inner ones.

X Q. 355. You also called that the Glendon flanged plate, did you not?

A. Yes, to distinguish it from the Glendon rib.

X Q. 356. About what was the size of that Glendon plate?

A. I believe the Glendon plates were a little larger in size than the Wolhaupter plates that we used. I think the Wolhaupter plates

then were four and a quarter inches by six inches, and I think the Glendon was a little larger, probably five by eight, but that I wouldn't be positive of.

X Q. 357. About how thick was it?

A. Oh, my report shows that the Wolhaupter we were using then was 3/16, and we had gone to a quarter inch within the heavier rail. The Glendon may have been 3/16 because it was not used on that, or it may have been the same thickness as the other.

X Q. 358. But you don't know the thickness of the Glendon plate?

A. No, I do not know it at this time.

X Q. 359. You didn't mention the thickness in your report.

A. No, I probably may not have known absolutely the thickness of the Wolhaupter only that I mention it in my report. We were gradually going from thin and small plates to thicker plate at that time.

X Q. 360. Do you recall at this time that during your investigation in 1904 you measured any of the Wolhaupter plates or any of the Glendon plates?

A. No, I don't.

X Q. 361. Have you any distinct recollection of having examined the top surface of the Glendon plates, to know whether there was one depression or groove, or two or three in the top of the plate?

397 A. Oh, there was more than one, there must have been,—let us see, probably three.

X Q. 362. Yes, there probably might have been thirty, but I want to know the fact.

A. Well, I remember there was more than one.

X Q. 363. Do you remember now having examined the top surface of the Glendon plate for the purpose of ascertaining whether it was round or flat between these grooves?

A. Well, I knew at that time what the top of the Glendon looked like, and I saw them in the track.

X Q. 364. That is, in position on the tie with a rail above the plate?

A. Yes, with a rail above the plate.

X Q. 365. Just what part of the road did you see them on?

A. Well, I think I say in my report that I saw them on the Raton mountain.

X Q. 366. And you observed them as you walked down the mountain?

A. Yes.

X Q. 367. Is that the only place on the road that the Glendon flanged plate was used at that time?

A. No, I know it was used in other places.

X Q. 368. What was the grade at that point?

A. Down that mountain?

X Q. 369. Yes.

A. Oh, it varies, up to a maximum probably of three and a half per cent.

X Q. 370. And I presume there are numerous curves as well as tangent track?

A. Oh, yes; yes.

X Q. 371. And was the Glendon plate used both on tangent and on curve at that point?

A. On that mountain we had them both on tangents and curves.

X Q. 372. Did you observe any difference in the condition of the Glendon plate at that time between its use on curve and its use on tangent?

A. Oh, I did not personally, but the track men told me they preferred the Glendon to the Wolhaupter from the fact that the two inner flanges were not so deep.

X Q. 373. But you, yourself, observed no difference on account of the depth of the inner flanges at that time?

A. I don't remember. If I had known then that this was
398 going to come up now I would have made a most elaborate examination, or taken photographs. You will probably note on your copy of my original report, on the seventh page, that I say: "While advocating a flat plate, I have endeavored to make this investigation strictly on its merits, where any one has favored flanged plates I have so stated and why."

X Q. 374. Now at one place in your direct examination this morning you stated in substance that the Wolhaupter plates which were in use at that time on the Santa Fe system were very similar to the Glendon. Please state just what you meant by that, and point out again what you consider to be the similar features between those two plates.

A. They were both flanged plates with the flanges running parallel to the grain of the wood in the tie.

X Q. 375. And that was the extent of the similarity, was it?

A. To a large degree, yes.

X Q. 376. And did I understand you correctly to say that Complainant's Exhibit 24 correctly illustrates the Wolhaupter tie plate that was in use at that time on the Santa Fe?

A. No, I don't think it does. I think that is possibly a later type.

X Q. 377. You stated in your direct examination this morning that Complainant's Exhibit 24 was similar to the Wolhaupter plate which was on the Santa Fe system in 1904.

A. I think I qualified it by saying that the top arches were more rounded than that.

X Q. 378. Then if Exhibit number 24 does not correctly show the style of Wolhaupter plate in use on the Santa Fe system in February, 1904, please describe more particularly what that Wolhaupter plate was?

A. Number 24 does not exactly show that the flanges underneath were all the same length. As I remember the Wolhaupter used at that time the flanges were all exactly the same length inside and outside. Then again, it was more rounded on the top of the plate in what was called, as I think I said this morning, the arch and girder type. This Exhibti 24 is flatter than the Wolhaupter plate that I remember seeing on the Raton mountain.

X Q. 379. Do you know where the Glendon tie plates which the Santa Fe used in 1904 were procured?

A. I presume from Dilworth Porter & Company.

X Q. 380. You have said in your direct examination that
399 the ties of the Santa Fe were "treated"; explain to the Court what you meant by that term.

A. Chemically treated, to prolong their life.

X Q. 381. And what kind of ties were used on which the Wolhaupter and the Glendon plates were placed?

A. Mostly pine.

X Q. 382. Will you describe again, please, the construction and design of the Goldie claw plate that you found in use on the Pennsylvania road?

A. It was a flat top plate with a shoulder, and flat underneath with four chisel shaped projections about an inch long on each corner of the plate.

X Q. 383. Do you know of your own knowledge which type of plate preceded, the Goldie claw plate or the Glendon flanged plate?

A. I do not know.

X Q. 384. And which was the earlier, the Glendon flange or the Glendon rib plate?

A. The Glendon rib.

X Q. 385. What was the first Glendon rib plate that you remember seeing?

A. On the Pennsylvania, in connection with this report.

X Q. 386. When you examined the Pennsylvania track east of Pittsburg on the part commonly known as the horse shoe curve, how long a time did you take for that inspection?

A. I was the whole day, from early in the morning until dark.

X Q. 387. And what plates did you find in use there did you say?

A. I found the Glendon rib and the Richards plate in about equal proportions and some of the Goldie claws on the horse shoe or near the horse shoe curve at Kittanning Point.

X Q. 388. What kind of an examination did you make of these three plates at that time to determine whether they were performing the service for which they were intended?

A. Just by examining the track and ties and the plates on the ties, and as much as anything getting the experience of the men who had used them for a number of years.

X Q. 389. By saying "just by examining them" you mean just looking at them as you walked along?

A. Yes, and getting down and making a—looking at them, probably, with my hand and knees on the ground in certain cases where such an examination would be possible and give any information.

400 X Q. 390. What was the condition of the ties at that point with these different tie plates on them?

A. Some, as I say, were old ties, old oak ties, and the plates had cut badly into them. That was further explained that same evening by the Roadmaster saying they were old ties when the plates

were put on, and it was for the purpose of getting an extra life out of the ties, and that purpose had been accomplished. In other words, the plates were not put on the ties when they were new.

X Q. 391. When the ties were new?

A. When the ties were new, yes.

X Q. 392. And you knew nothing at that time about the age of the tie plates other than what was told you by the Roadmaster?

A. Nothing only what was told me by the track officials. The Assistant Roadmaster accompanied me; the Roadmaster himself, Mr. Ehrenfelt, was away that day and his assistant accompanied me during the whole day, meeting the different section foremen as we came to them. Then in the evening I went up the mountain on an engine to Gallitzin and by that time, probably eight o'clock in the evening, Mr. Ehrenfelt had returned and we spent the evening discussing the general proposition.

X Q. 393. When the Richards tie plates were in position on the ties and under the rail, could you see whether there was a groove on the under side of the Richards plate?

A. No, not where they were sunk in.

X Q. 394. Could you tell whether the ribs were embedded in the fibre of the tie or not?

A. Not where they were sunk in. In those matters I had to be guided by the experience and actual result of the track men themselves.

X Q. 395. You don't know whether or not those ribs actually cut the fibre of the tie, or simply pushed the fibre to one side, do you?

A. No, I do not.

X Q. 396. Did you notice on any of those Richard plates whether there was any perceptible longitudinal shifting of the plate itself with respect to the tie?

A. I do not remember seeing any. The men themselves favored the rib rather than the other which had just the cavity underneath.

X Q. 397. That is, they favored the Richards rather than the Goldie?

401 A. No, they favored the ribbed; the ribbed was the Glendon.

X Q. 398. Glendon?

A. Yes.

X Q. 399. I believe you said those Glendon plates had two ribs underneath?

A. The Glendon rib plates had two ribs across the tie.

X Q. 400. I believe you said in your direct examination that you could not or did not see any concavity or depression in the top of the Goldie claw plates owing to the flange of the rail being upon the plate.

A. Yes, I said that, and I further saw some of the Goldie claws at the section house at Kittanning Point, which had been taken out of the track for cause, and I don't remember any depressions either on those. I wasn't hunting depressions on top.

X Q. 401. You didn't examine those plates with any minuteness at that time?

A. Not for depressions on the surface, I did for the condition of the claws themselves, and that was all.

X Q. 402. And if there was any depression on the top at that time it made no perceptible impression upon your mind?

A. No.

X Q. 403. Do you recall whether those Goldie claw plates were bent up at all, those that had been taken out of track which you saw at Kittanning Point?

A. I see in my report I speak of that, and if you will please follow me: "I saw some Goldie claws in the track some all right, others broken and claws off and a few in the scrap pile taken out for cause," but I don't remember what the cause was, for my purpose that was sufficient at the time.

X Q. 404. Did you know at the time the weight of rail that was used on the Pennsylvania track at that point?

A. Yes, I think it was ninety pounds.

X Q. 405. Were the Glendon plates that were used on the Santa Fe, between Raton and Starkville, where you say you saw a few of them in use, the same as the Glend .n plates that you have been describing?

A. I have just been describing the Glendon rib.

X Q. 406. Yes.

A. And these were not the Glendon rib, these were the Glendon flange that I saw on the mountain, on the Raton mountain.

402 X Q. 407. Please state again whether they were used on curve or tangent at that point?

A. On the mountain? I said a moment ago they were used on both curves and tangents down that mountain.

Mr. Reed: Down what mountain.

A. The Raton mountain, between Wootten and Starkville.

The witness E. O. Faulkner is withdrawn at this time, for the purpose of taking the deposition of the witness Daniel Elliott.

Whereupon an adjournment was taken to November 23, 1909, at 10:30 o'clock A. M.

November 23, 1909—10:15 o'clock a. am.

Met pursuant to adjournment.

Present as before.

DANIEL ELLIOTT, a witness of lawful age, having been first, and before the commencement of any examination, duly cautioned, examined and sworn as by statute provided, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, age and residence?

A. Daniel Elliott; age, about fifty-two; I live in Amarillo, Texas.

Q. 2. What is your occupation, Mr. Elliott?

A. Assistant Superintendent, Santa Fe Company.

Q. 2½. And of what portion of the Santa Fe system are you in charge?

A. From Waynoka, in Oklahoma, to Pecos, Texas.

Q. 3. How long have you been connected with the Santa Fe railroad system?

A. I went to work for the Santa Fe in March, 1882, and have been working for them continually since that time.

Q. 4. Were you ever Roadmaster for any portion of the system?

A. Yes, sir.

Q. 5. When did you become Roadmaster and about how long did you continue in that capacity?

A. I was appointed Roadmaster in 1883 and continued as Roadmaster until about 1906.

403 Q. 6. In the years 1892 and 1893, and again in the year 1904 were you acting as Roadmaster?

A. Yes, sir.

Q. 7. At the former times, in 1892 and 1893, where were you Roadmaster?

A. From Las Vegas, in New Mexico, in Albuquerque in New Mexico.

Q. 8. What kind of a division was that?

A. It was over the Glorietta mountains, a spur of the Rocky mountains.

Q. 9. What were your duties as Roadmaster, what did you do?

A. To look after and maintain the tracks on that division.

Q. 10. When did you first become acquainted with tie plates, if ever?

A. About 1892 or 1893. 1892, I think.

Q. 11. And what was the occasion on which your attention was called first to tie plates in connection with the Santa Fe road?

A. Why, they sent us some tie plates for test, the first tie plates I ever handled there.

Q. 12. From what source did you obtain these tie plates that you speak of?

A. Well, they came to me from the Division Superintendent, Mr. Charles Dyer.

Q. 13. And how many were there of them?

A. There was one thousand.

Q. 14. What if anything did you do with those tie plates?

A. I inserted them on a curve to test them, to see if they would hold the track.

Q. 15. Where was this curve?

A. This was the first curve west of Sulzbacher station.

Q. 16. And can you tell us the time or date when these one thousand tie plates were inserted at that place?

A. It was in 1892.

Q. 17. What was the character of the track as to grades or curves where the plates were inserted?

A. Well, the curve I think was a four degree, and the grade I think was one and one-half per cent.

Q. 18. And the track, as to its being main line or switch?

A. The track was what we call dirt track, that is, no ballast, and pine ties.

Q. 19. And was it main line or switch?

A. It was the main line.

404 Q. 20. I wish you would state the fact as to whether these tie plates were inserted on the ties consecutively, on that curve?

A. Yes, sir, we equipped one full curve, and perhaps two, but if so they were right close together, two first curves west of Sulzbacher.

Q. 21. And under both rails?

A. Under both rails, on each side of the track.

Q. 22. What was the size of the rail?

A. Sixty-six pound to a yard.

Q. 23. What was the age of the ties on which these tie plates were placed?

A. Well, that main line was laid, I think, in 1880, and there was quite a few ties renewed; some were older, and some not very old. Some were sound and some wasn't very sound.

Q. 24. Now can you describe to us the tie plates in this lot of one thousand that were inserted as you described?

A. Yes, sir, they were a four hole plate with a shoulder concaved on top and ribs on the bottom.

Q. 25. Can you tell us the direction of the bottom ribs?

A. Crossways of the plate.

Q. 26. And how as to the tie?

A. The rib would be across the tie, across the grain.

Q. 27. And the cavity on top, how did that run?

A. That would run across the tie and lengthwise the rail.

Q. 28. How long, if you know, did these tie plates remain at this point?

A. They remained until we renewed the steel, laid a heavier rail, that was several years, perhaps five or six, something like that, maybe more, maybe seven or eight.

Q. 29. And then what was done with them if you know?

A. They were moved to another curve and inserted again.

Q. 30. Where was this curve to which they were changed?

A. That was the first six degree curve west of Las Vegas these tie plates were put on.

Q. 31. And under what weight of rail were they inserted the second time?

A. Under the same weight, 66.

Q. 32. Did you observe the action and effect of these thousand tie plates at the place that they were first inserted?

A. Yes, sir.

Q. 33. What was the effect of these tie plates in reference to keeping the track in place?

A. It was good.

405 Q. 34. I wish you would state whether you observed, in connection with these tie plates——

A. I watched them closely for years, because they were the first tie plates we used, first tie plates, and I was afraid of tie plates in them days, of course, anything new, and of course I watched it close, the power was heavy and I was afraid the tracks was going to spread when we put those plates on and I watched them very close for a while.

Q. 35. State what if any effect there was in reference to spreading?

A. I was surprised the way the plates held the rail, of course, at that time.

Q. 36. Did you observe any spreading on these rails?

A. No, sir, I did not, they held the rail all right. Of course the curve was only four degrees, while we have ten degree curves on that division.

Q. 37. Did you observe the effect of these tie plates on the ties?

A. Yes, sir.

Q. 38. State what the effect was as to injuring or disintegrating the ties?

A. They were easy on them, they helped to preserve the tie.

Q. 39. Do you recall having written a letter to Mr. Charles Dyer, in the early winter of 1893?

A. Yes, sir, I remember the letter.

Q. 40. Look at the letter impression book already identified as Exhibit D in connection with the deposition of Mr. E. O. Faulkner, and state what that book is?

A. Yes, sir, that is my old letter book.

Q. 41. Calling your attention to page 416, identified as Exhibit E, please state in whose hand writing that letter impression is?

A. That is my hand writing.

Q. 42. Did you write that letter at that time?

A. I did.

Q. 43. Did you forward the original?

A. The original went to Mr. Dyer, who was Superintendent at that time.

Q. 44. What did you mean by the expression "7500 tie plates 61#"?

A. Well, that is 61 pound rail.

Q. 45. And the expression below, "66#" means what?

406 A. I asked for 8500 tie plates for 66 pound rail; we had a lot of 61 in the track at that time as well as the 66, you know. Of course that is all out now.

Q. 46. Now you use the expression "I received one thousand plates short time ago and think they are called the Potter plate, I consider them far superior to the Servis plate for curves." State whether that was your judgment at that time?

A. Yes, sir. We had received a few of the Servis afterwards used them on the coal road and I didn't like the Servis plate and thought I would get this other kind of plate, I considered them very much superior to the old Servis type plate.

Q. 47. Do you recall whether you did receive any more of these original plates?

A. No, sir, we never received any more after that.

Q. 48. Do you recall a visit to you from Mr. E. O. Faulkner, in the early spring of 1904?

A. Yes, sir.

Q. 49. What if anything did you say or report to him in reference to these tie plates which you had received and inserted at these

points and which you mention in this letter as being the Potter plate?

A. Well, the name of the plate was the Dilworth Porter and I probably called them the Potter instead of Porter.

Q. 50. Did you have any conversation with Mr. Faulkner at this time that I speak of, in 1904, in reference to these plates?

A. Yes, sir, I did.

Q. 51. I wish you would state what if anything you said to him about where they were at that time?

A. Why, we were talking about them plates and I think that he had a plate with him that much resembled this old tie plate, and of course I always thought that this old Dilworth Porter tie plate was the best plate I ever saw, and he had one that much resembled that plate, and I said to him, why that is the old Porter plate,—I might have called it a Potter plate, but it is the Dilworth Porter tie plate—that we used a long time ago for a test. I told him that was the only time that I could get hold of any of those plates and always wondered why the railroad didn't adopt them as a standard and use more of them.

Q. 52. Going back a little: Did any of these plates break?

A. Oh, yes, sir, they broke when the heavy power came, some of them broke.

407 Q. 53. Where did they break?

A. They broke right along the shoulder on the outside, cross-ways.

Q. 54. And what is your judgment as to the reason of the breakage?

A. Nothing except they were too light for the heavy power. If they had been heavier they would have been all right.

Q. 55. I wish you would state whether you told Mr. Faulkner anything about where these plates, or what was left of them, were at that time?

A. Yes, sir, I told him where the plates were and where I had used them and how long they had been in use, the service they had rendered, and I was anxious that he would go and see them, very anxious.

Q. 56. Well, where did you tell him they were at that time?

A. They were on the first curve west of Las Vegas, at that time.

Q. 57. And where was this conversation?

A. That was in my office, at Las Vegas.

Q. 58. Well, did you go out with Mr. Faulkner to examine the plates?

A. No, I didn't go out that morning.

Q. 59. For what reason?

A. Well, I was recovering from an injury and wasn't in condition to go that morning. But I told him exactly the curve, he couldn't miss it, the first curve west of the town, it was right there on that curve.

Q. 60. Well, did Mr. Faulkner ever show you any of those tie plates?

A. Yes, sir, he went out there and brought in two tie plates and

that piece of tie right there, Exhibit A. He was interested in treating ties, also, at that time. He talked about treating ties, &c.

Q. 61. Look at the two tie plates marked Exhibit B and Exhibit C, and identify them if you can.

A. Yes, sir, those are two of the old, original plates that I had.

Q. 62. I wish you would state whether you can identify these as the tie plates brought in by Mr. Faulkner that morning?

A. Yes, sir, I should say that is the two tie plates that he brought in.

Q. 63. And the price of tie that is marked Exhibit A?

A. I think so, I think that is the same piece of tie.

408 Q. 64. I wish you would state whether Mr. Faulkner took away those tie plates and piece of tie with him at that time, or if they were wrapped up and what was done with them?

A. I remember I wrapped them up or had them wrapped up and sent to him by express, I think here to Chicago.

Q. 65. Since this period in 1892 have you had experience with tie plates?

A. Oh, yes, sir.

Q. 66. What kind of tie plates have been used on your division?

A. Why, we used the Servis plate, then we used the Wolhaupter plate. Oh, I have had experience with a great many plates as samples, but we used the Wolhaupter plate perhaps more than any other plate.

Q. 67. I wish you would describe the Wolhaupter plate that you used?

A. The Wolhaupter plate is—it has no shoulder on top and it is what we call a flanged plate, has sharp flanges on the bottom running lengthwise of the plate.

Q. 68. And what about the top?

A. Well, the top is grooved slightly, you know, lengthwise of the plate.

Q. 69. Did you ever use what is known as the Glendon flanged plate?

A. Glendon flanged plate, yes, sir, I think we used some of those.

Q. 70. Describe those.

A. They are just about like the Wolhaupter, except I think the outside edge projects out a little more than the Wolhaupter does. They are a flanged plate.

Q. 71. And what about the top?

A. Well, the top is just about the same as the Wolhaupter, it has got the grooves in the top lengthwise.

Q. 72. In what direction do the top grooves and the lower flanges run in both the Wolhaupter and Glendon plates?

A. They run lengthwise of the plate, and of course it is lengthwise of the tie.

Q. 73. Have you observed the action of the Wolhaupter flanged plate that you have described, in track?

A. Yes, sir; they are laid on ties, they would literally chop the tie to pieces. They wouldn't lay still, you know, smooth, and they are

rocking around, and of course those flanges on the bottom just cut the ties all to pieces, the pine ties.

409 Q. 74. And what about the duration of the Wolhaupter plates themselves?

A. Well, the kind we had went to pieces, you know, they broke at both ends, but more on the outside first. They did break at both ends at the spike holes.

Q. 75. What is your judgment, based on your actual experience and observation of the Wolhaupter flanged plate, as to its being a desirable plate?

A. Oh, no, it is a very undesirable plate.

Q. 76. And what is your judgment as to the Glendon flange?

A. Well, that is about the same kind of plate.

Q. 77. What was the action of the Glendon flange on the ties?

A. Well, I think the Glendon flange was a little worse, if anything, the shoulder projected out so far that it had kind of a rocking motion, don't you see, and the flanges on the bottom chewed the tie.

Q. 78. You have used the expression "shoulder," do you mean shoulder on the top of the plate?

A. No, on the bottom; that is, the outside projected out a little I think, out over the flange.

Q. 79. But it wasn't a shoulder of the kind shown in the old Dilworth Porter plates?

A. No, sir, it was smooth on top, that is, it had no shoulder on top. That was another objection, on a sharp curve, if the spike would break you had nothing there to hold. Spikes will break in the winter, you know, some.

Q. 80. Have you observed the action of the Wolhaupter flanged plate as to holding track or rails in place?

A. Oh, when the tie was new and sound, before the plate began to rock, they held the track fairly well.

Q. 81. Well, after it had been in use for some time, what was the operation and effect?

A. They were no good after they had been in use a little while they wouldn't hold after they had softened up the tie from this cutting.

Q. 82. Did you observe any effect from the Wolhaupter flange and Glendon flange on the tie resultant from the water that was permitted to get to the tie?

A. Oh, yes, there would be a black rotten hold right under the plate; when you would remove the plate the tie would be badly rotted and decomposed, turned black and rot right under the plate.

Mr. Reed: Counsel for defendant offers in evidence the
410 letter, Exhibit E, on page 416 of Exhibit D, and desires it read into the record, and it is so done and is as follows:

"LAS VEGAS, 1/25—3.

Charles Dyer, Esq., Supt.

DEAR SIR: I will need for the year '93 7500 tie plates 61# and 8500 tie plates 66#. I received one thousand plates short time ago,

I think they are called the Potter plate. I consider them far superior to the Servis plate for curves.

Yours truly,

D. ELLIOTT, *R. M.*"

Cross-examination by Mr. Brown:

X Q. 83. Where did you say you lived, Mr. Elliott?

A. I live in Amarillo, Texas, now.

X Q. 84. How far from Chicago is the nearest point on your section on the road?

A. Waynoka, at Oklahoma, I think it is about 745 miles, something like that.

X Q. 85. Did any court officer serve any subpœna or paper on you to come up here for this examination?

A. No, sir.

X Q. 86. How did you happen to come up here?

A. I had instructions from my Superintendent to come here.

X Q. 87. And who is your Superintendent?

A. Why, it is G. C. Starkweather.

X Q. 88. He is Superintendent of what?

A. Of that division I work on.

X Q. 89. Of the Santa Fe system?

A. Yes, sir.

X Q. 90. You haven't any special interest in this suit, have you?

A. No, sir.

X Q. 91. When your Superintendent gave you these instructions did he tell you what you were to testify about?

A. No, sir, he didn't. He told me to report to Mr. Storey here this morning.

X Q. 92. Did you know the testimony was concerning tie plates or matters of that sort?

A. Well, I understood it was on the tie plate question.

X Q. 93. Now, Mr. Elliott, you have given your opinion
411 as to the effect of certain tie plates on the ties. Were those ties that you referred to treated ties or untreated ties?

A. Yes, sir, they were treated ties?

X Q. 94. They were treated ties?

A. Yes, sir, zinc treated.

X Q. 95. Were they treated with anything else than the zinc preparation?

A. Why the zinc and glue was used at first, and tannin, then the glue was cut out; and there may have been some of the ties that were treated with the zinc and glue and tannin, and there may have been some in there just treated with zinc and tannin. They were what we called the zinc treated ties.

X Q. 96. On any portion of the road having the ties that you have testified about this morning, were any of the ties untreated?

A. No, sir, I don't think so, at that time.

X Q. 97. They were all treated ties that you have testified about?

A. The untreated tie only lasted about four years; they are very short lived, you know, the mountain pine, very short lived.

X Q. 98. That was the normal life of a pine tie, was it, four years?

A. Yes, sir, and many of them had to come out in about three years, and three years and a half.

X Q. 99. And what was the normal life of the treated tie?

A. Well, the first treated ties run about from twelve to fifteen years. Of course the business wasn't as heavy then as it is now.

X Q. 100. And those ties were the ones that were used without the tie plates, I assume?

A. Yes, sir, we used them, we used a brace block before we used the plates.

X Q. 101. Can you state from your experience what is the difference in life between a treated tie used with the rail directly on the tie, and a treated tie used with a tie plate of any form underneath the rail?

A. Why the tie would last longer without the Wolhaupter plate than it would with it.

X Q. 102. Well, what about the other forms of plate?

A. The other plate, plate of that kind, Exhibit B, is all right, or any plate of that description. That plate right there is all right, Exhibit C.

X Q. 103. Or any plate of that description?

A. Yes, sir.

412 X Q. 104. Now from your experience with these plates, to what do you attribute the wearing away or spoiling or damaging of the tie when the Wolhaupter plate is used?

A. Why, it is the sharp flanges on the bottom, cuts the ties and they don't lay still, you know. When the train passes over them they get a little motion, and just keeps that knife a working down under there on the pine tie.

X Q. 105. When you use the word "Wolhaupter" then, you refer to the one particular shape or form of tie, do you?

A. Plate.

X Q. 106. Of tie plate, or did you use various kinds of Wolhaupter plates?

A. Why, the kind we used, it wasn't a very thick plate.

X Q. 107. No, answer my question first, whether you used more than one type of Wolhaupter plate or not?

A. I don't think so, not more than one.

X Q. 108. So when you have been speaking of Wolhaupter plate you always mean the same thing?

A. Oh, yes; yes, sir.

X Q. 109. Now please describe, as close as you can, and as completely as you can, the exact construction of that Wolhaupter plate?

A. Well, it was a plate about—the plate we received was probably about four or four and a half inches wide, I should think, and perhaps about as long as this plate Exhibit C, it might have been a little longer. Of course for the heavier rail it probably was a little longer, probably seven and a half or eight inches long. It had, I think, three flanges on the bottom running lengthwise, and grooves on top running lengthwise the plate.

X Q. 110. That is as near as you can recollect the size and shape of the plate, is it?

A. Yes, sir.

X Q. 111. Now referring to the bottom flanges only of which you said you thought there were three, do you recall that they were all the same depth below the plate, or of different depths?

A. Why, I think they changed them a little, if I remember right, but I think they were all the same depth finally. I think there was three flanges all the same depth.

X Q. 112. That is the last that you used with the——

A. The last that we used, yes, sir.

X Q. 113. They were the same depth?

A. I think so.

413 X Q. 114. Some of the earlier Wolhaupter plates you used, the flanges——

A. Well, now, I won't say positive about that.

X Q. 115. You don't remember about that?

A. I think the Wolhaupter plate, the flanges were all the same.

X Q. 116. Now what was the shape of those flanges on cross-section?

A. They ran lengthwise the plate and came down to a sharp point the full length of the plate.

X Q. 117. And were the sides tapering or parallel with each other, the sides of each flange?

A. They were tapering, they ran down to a sharp point.

X Q. 118. Then as you recollect at the edge of the flange it was a "V" shape, was it?

A. No, I think it was square on the outside and tapered on the inside.

X Q. 119. That is, the outside edge of the flange was at right angles with the base of the plate and the inside edge of the flange tapered towards a point?

A. Yes, sir, I think that is the shape of the plate.

X Q. 120. That is the two outside flanges were that shape; how about the middle flange?

A. The middle flange tapered both ways. The outside may have been tapered a little to a sharp point on the outside.

X Q. 121. Now was the bottom of this Wolhaupter plate that you used a flat bottom or not?

A. The bottom you mean?

X Q. 122. The space between these flanges, was that a flat bottom?

A. On the bottom?

X Q. 123. Yes.

A. Yes, sir, I think it was.

X Q. 124. Then it was a flat bottomed plate with three flanges such as you have described?

A. Yes, sir.

X Q. 125. Now the top of the plate, did it have any shoulder on it, rail sustaining shoulder?

A. No, sir.

X Q. 126. No rail sustaining shoulder; you are quite sure about that?

A. Oh, yes, I am sure about that.

X Q. 127. How many spike holes did it have?

414 A. I think the spike holes was changed. I think the last we got had four spike holes.

X Q. 128. And the earlier ones had how many?

A. The earlier ones may not have had but two spike holes or perhaps three.

X Q. 129. Would a plate having four spike holes tend to hold the track to gauge on the curve any better than one having two spike holes?

A. It would if the plate didn't break at the spike holes. As long as the plate was sound of course it would have a double strength.

X Q. 130. I mean other things being equal, would a four spike hole plate tend to hold the track to gauge better than a two spike hole plate.

A. Why, yes, four spikes would hold better than two.

X Q. 131. And four would hold better than three?

A. Yes, sir, four would hold better than three.

X Q. 132. Now about these grooves that you say were on the top surface of the Wolhaupter plate; what kind of grooves were they?

A. They were grooves running lengthwise the plate on top.

X Q. 133. What was the shape of those grooves, if you remember?

A. Why, they came down kind of a wavy like surface on top lengthwise of the plate.

X Q. 134. How was the space between the grooves shaped?

A. Why, the space between the grooves I think was flat.

X Q. 135. So that the rail base rested on a flat surface on top, did it?

A. Yes, it rested on the flat surface between the grooves.

X Q. 136. Look at this bundle of tie plates in front of you, see if you can find a plate that looks to you like the Wolhaupter plate; look at all of them.

A. This plate right here resembles it (referring to aluminum model Exhibit O). Well, I should say this plate resembles it the most, but this don't look like the Wolhaupter I used, Exhibit O.

X Q. 137. When you got the Wolhaupter plates the first time, how did you put them in track?

A. We inserted them on pine ties on the curve, on every tie on the curve.

X Q. 138. Did you force the flanges down?

A. We embedded them with a tool we had, straddle the rails and embedded them in the ties.

415 X Q. 139. You didn't leave anything for the weight of the passing load to force them in, you forced them in yourself?

A. We forced them in all possible before we allowed the load to go over them.

X Q. 140. And when you got this lot of one thousand plates that you mentioned in your letter as the Potter plate, but which you say

this morning may have been the Dilworth Porter plate, how did you insert them in the track?

A. They, they were not embedded, they were just put under the rail. There was no instruction to embed them at the time and they were the first plates I ever handled and we just put them under the rail, the weight of the trains and engines embedded the plates.

X Q. 141. You let the load as it passed along each time do the work of embedding?

A. Yes, sir.

X Q. 142. How long were those tie plates, those one thousand tie plates, in the curve west of Sulzbacher?

A. They were there until we relaid the rail.

X Q. 143. Yes, but how long a time was that?

A. Must have been six or eight years. The records will show when that 75 pound rail was laid on that curve, I can't just remember now when we relaid that rail.

X Q. 144. You think it was there six or seven years?

A. I think so, must have been six or seven years in there.

X Q. 145. And as I understood you to say you put those tie plates, two on a tie, one at each end?

A. Yes, sir.

X Q. 146. And on consecutive ties?

A. Every tie, yes, sir, except the joints, we didn't put them on the joints; the joints was laid with angle bars and there was none on the joints.

X Q. 147. But it was a continuous piece of track?

A. Yes, sir, the curve was all equipped with those plates, the complete curve.

X Q. 148. What was the condition of the ties in that curve; were they all about the same kind of wood?

A. They were all pine, yes, sir.

X Q. 149. All pine?

A. Yes, sir.

X Q. 150. All clear, straight pine?

A. Well, what we call a mountain pine.

X Q. 151. Well, I may not have used the word "clear" as
416 you understand it. What I meant by that was, were they all good, clear timber without knots or knot holes, or were they——

A. Well, they had been in service some years, you know, some of them perhaps a great many of them, and a tie in that country has knots in it and of course there were some spike holes.

X Q. 152. When you say a tie in that country has knots, do you mean that the general run of ties used at that time had knots in them?

A. Yes, sir, they were hewn ties.

X Q. 153. And those were the ties that were used on this piece of curved track?

A. Oh, yes, sir.

X Q. 154. Have you any way of telling at this time how many of the ties on that curve on which you placed the Dilworth Porter

tie plates, had been renewed since that main line track was first laid in 1880? In other words, how many were new or substantially new ties and how many were old ties?

A. Well, sir, they were all renewed. There was no untreated ties in there, I don't think. Some of the ties, perhaps, was in the track six or eight years, some of them one or two years, perhaps some of them eight or nine years. Those pine ties didn't rot out, all the same, some of them went sooner than others, you know.

X Q. 155. Then the five hundred odd ties that you laid these Dilworth Porter tie plates on at that curve, were all good, practically good and in sound condition——

A. Yes, sir, they were all pretty good ties.

X Q. 156. —when you put the tie plates on?

A. Yes, they were pretty fair ties. Of course we used no plates before and the tie of course was rail-cut some.

X Q. 157. The ties were rail-cut?

A. Were rail-cut some, but we adzed the ties off, put the plates on. There was no very rotten ties in the curve.

X Q. 158. Now about how long do you say those tie plates were in use there before you took them up and changed them to that section west of Las Vegas?

A. Well, it must have been six or seven years anyhow, and perhaps more. We could find the record when that steel was relaid.

X Q. 159. You don't remember definitely yourself at this time?

417 A. I don't remember definitely. They were there until the steel was relaid.

X Q. 160. And when you took them up to relay the track you found about what proportion of them serviceable and what proportion bad?

A. Well, perhaps about three-fourths good.

X Q. 161. About three-fourths of them were good?

A. Yes, sir.

X Q. 162. And the good ones you put in the track west of Las Vegas?

A. Yes, sir.

X Q. 163. You didn't waste any of the good ones, did you?

A. Oh, no.

X Q. 164. Used them all up?

A. Used them all up, yes, sir.

X Q. 165. About how long had they been in the track west of Las Vegas before Mr. Faulkner called on you?

A. Perhaps two or three years.

X Q. 166. Do you know of any of them having been taken out from that relaid place before Mr. Faulkner called on you?

A. Well, in relaying the new rail there might have been a few scattering ones lost, you know; but the idea was to remove them from that curve west of Sulzbacher to this other curve that had the same weight rail that was equipped with brace blocks; we took off the brace blocks and put these old plates on that curve because they were considered much better than the brace block.

X Q. 167. Now after you had put these plates, about three-quarters of the whole lot, on the new curve, that is, on the curve west of Las Vegas, do you know of any of those being taken up from that curve after they were laid and before Mr. Faulkner called on you?

A. Why, there may have been some of them in the Las Vegas yard,—used in the Las Vegas yard.

X Q. 168. But you don't know that, do you?

A. No, I am not certain about that, as I say, some scattered ones might have gotten in there.

X Q. 169. Well, but that portion of the track would not have been disturbed without your knowing it?

A. Oh, no; no, sir, the plates were on the curve west of Las Vegas, I am quite certain, when Mr. Faulkner called.

X Q. 170. What I am getting at, Mr. Elliott, is this: When Mr. Faulkner called there and you directed him to this new location of the curve west of Las Vegas, he was supposed to have found
418 there practically all of the plates that you had put in when these plates were laid in that place from the original place?

A. Nearly all, except what, as I say, had been broken.

X Q. 171. Or a few scattered ones?

A. Few scattered ones.

X Q. 172. There wouldn't have been such a number as two or three hundred missing, would there, out of, say 750?

A. If I remember right there was quite a few scattering ones lost because I noticed them afterwards, I noticed some around the Las Vegas yard, had got in there. In relaying steel, you know, and changing angle bars and joints and tie plates why there is liable to be some of them scattered, you know, and finally picked up, you know, in the clean up, and might have gotten in the yard.

X Q. 173. I understand that, but when you say some of them scattering, I was trying to get some idea as to numbers; that might be ten, fifteen or twenty, possibly, but wouldn't be two or three hundred, would it?

A. There wasn't near as many to go on the curve near Las Vegas as there was originally laid on the curve west of Sulzbacher.

X Q. 174. No, you have testified that there were one thousand originally sent to you.

A. Yes, sir.

X Q. 175. That went in west of Sulzbacher?

A. Yes, sir.

X Q. 176. Then you have also said that when you took up those plates to relay that track you had about three quarters of the original lot to lay in the curve west of Las Vegas?

A. No, sir, if I remember right, I said there was about a quarter of them broke.

X Q. 177. About one quarter broken?

A. Broken. I think about a quarter of them was broken.

X Q. 178. Well, of course you didn't relay the broken ones.

A. No sir, they were throwed in the scrap.

X Q. 179. Then of the 750 left, approximately about how many

of those were lost or mislaid in the scattering proposition that you have mentioned? And about how many were put in the track, substantially all in the track or not, that is what I want to get at.

A. Well, I remember when we had the curve equipped with the old plates there was not near as many in that curve as there
419 was in the original curve, perhaps by 350, or maybe 400.

X Q. 180. That is, the curve west of Las Vegas might have been 350 or 400 short of the thousand that were in the original place?

A. Yes, sir.

X Q. 181. Mr. Elliott, how do you know that the two tie plates marked Exhibits B and C, and the piece of the tie marked Exhibit A, are the identical articles that were taken out of the track west of Las Vegas and which you said you shipped to Mr. Faulkner at Chicago, by express?

A. As near as I can remember they are the very same plates and piece of tie, they certainly look just like the ones I shipped.

X Q. 182. You put no personal or private mark on any of those articles before they were shipped to Chicago, did you?

A. Oh, no, no personal mark, more than I watched the plates for years, was perfectly well acquainted with them. This plate Exhibit C shows where the chloride of zinc eat it up on the bottom here a little, and it certainly looks to me to be the same plate.

X Q. 183. Now about the Dilworth Porter tie plates that were used in this second curve, that is, the track west of Las Vegas; how long did they remain in track?

A. They remained until we laid the 75 pound rail, that must have been two or three years, something like that.

X Q. 184. And what become of those tie plates when they were taken up, do you know?

A. They were shipped into the Las Vegas yard and used on the turnouts there, the side tracks.

X Q. 185. Are they there yet, do you know?

A. Well, they may be, some of them right there on the tracks today.

X Q. 186. When they were used on this curve west of Sulzbacher, two or three years, where they were first used, what was the condition of the ties when they were put in track?

A. Ties were very fair. You understand we are obliged to keep pretty good ties on these curves on account of the heavy power; the ties we always keep in very fair condition.

X Q. 187. Were you present when the 75 pound rail was put in west of Las Vegas on this curve?

A. I was on that division, I may not have been right there on the date that curve was relaid.

420 X Q. 188. Well, what is the fact about it, were you or were you not there on the day it was relaid?

A. I can't say.

X Q. 189. How soon after the 75 pound was relaid were the plates that were taken out shipped to the Las Vegas yard?

A. Well, it was some little time, perhaps a month or six weeks.

X Q. 190. Were any of the ties shipped into the Las Vegas yard at that time?

A. Oh, yes, all the old ties came into the yard finally, was used for engine wood, &c.

X Q. 191. But were any of the ties on which these Dilworth Porter plates had been used, taken up when the 75 pound rail was put in track and shipped into the yard?

A. Yes, sir, I think there was.

X Q. 192. That was because the ties were unserviceable?

A. Yes, sir, perhaps got a little rotted, something of that kind.

X Q. 193. About what proportion of those ties were in that condition?

A. Well, I couldn't say now what the proportion was at that time we relaid the steel.

X Q. 194. What do you mean by saying that these Dilworth Porter tie plates were easy on the ties at this curve west of Las Vegas?

A. I mean they seemed to embed themselves there in such a way that they laid solid under the rail on top of the tie and done no churning or cutting. When the plate was taken off, the tie, if anything, was sounder under the plate than it was outside the plate.

X Q. 195. Did you cut any of those ties, have them sawed off so as to look at them to know whether that was so?

A. Oh, yes, sir, we was examining the ties pretty closely on account of the treatment at that time.

X Q. 196. Then the treatment that the Santa Fe was using at that time was having its effect upon the wear and the life of the tie, was it, irrespective of whether they used tie plates or not?

A. Oh, yes, sir.

X Q. 197. And it was even so bad that it would eat the tie plate, as you pointed out here on this tie plate, was it?

A. Why, if the plate was in long enough it would have an effect on it, a little.

421 X Q. 198. And that was equally true with a flat plate was it not, that is, the chloride solution would eat a flat plate just the same as it would eat a flanged plate?

A. If you left it there long enough it would perhaps eat in a little, not very much.

X Q. 199. Well, then, if these Dilworth Porter plates that had these bottom flanges on that you speak of helped to preserve the tie because it was pressed firmly into the tie, the presence of the flanges couldn't have had any bad effect in that direction, could it?

A. The flanges crosswise? No, sir, I don't think they had.

X Q. 200. Then when you spoke of the Wolhaupter flanges having this bad effect on the ties it was not because of the flanges themselves, any more than the Dilworth Porter flanges, but because the Wolhaupter plate was not set firmly down into the tie, was that it?

A. The flanges on the Wolhaupter plate was much longer and sharper than the flanges on the old Dilworth Porter plate, and besides, they didn't seem to lay as soft and solid as the old Dilworth Porter plate.

X Q. 201. Well now, in your opinion then, if the Wolhaupter plate even with its longer flanges had been set down into the tie as firmly as the Dilworth Porter plate was set down into the tie, there would have been no difference in the life of the tie would there, in the two cases?

A. For some reason or other it seemed to be impossible to embed the plate so that it would lay solid under the rail when the train passed over it?

X Q. 202. So that that was the fault, and not the mere fact that the Wolhaupter plate had the lower flanges on it?

A. Well, the flanges being longer of course cut the tie worse.

X Q. 203. So the length of the flange may have had something to do with it, as well as the imperfect seating of the tie plate, is that it?

A. Certainly, the sharp, long flanges was what caused the cutting so badly.

X Q. 204. Did you ever use a tie plate perfectly flat on the bottom without any flanges at all?

A. Yes, sir.

X Q. 205. And on ties that were treated chemically the same as these ties you have been speaking of?

A. Yes, sir.

422 X Q. 206. And how do those plates affect the tie?

A. Easy on the tie.

X Q. 207. Is the tie under that kind of a plate any better, any sounder after wear than any other part of the tie?

A. I think it is harder and sounder.

X Q. 208. Does the chloride of zinc or other preparation that you have used on these ties wear out the tie just the same whether you use the tie plate or not?

A. Well, that is supposed to preserve the tie, that chloride of zinc.

X Q. 209. But does it in fact preserve it?

A. Why, yes, I think it does, for a certain length of time.

X Q. 210. Isn't it a fact that on the Santa Fe system you have used a great many different kinds of tie preservative in the endeavor to get a good tie preservative, or preserving preparation?

A. Why, not so very many, no. We used a chloride zinc process and we used the creosote. I have tested a whole lot of different kinds of tie preserver on these mountains and I have tested a whole lot of different kinds of tie plates.

X Q. 211. And I understand you to say that all the Wolhaupter plates that you have used on the sections of the road that you have to do with, are of the pattern that you have heretofore described, the difference being only in the length of the flanges?

A. When we relaid the 66 and the 75 pound rail we used the Wolhaupter plate. I have used probably hundreds of thousands of them and they are a plate something like this Exhibit O, without this shoulder on top. They are straight at each end, and perhaps about this same width, but it seems to me they turned down straight on the outside.

X Q. 212. Do you remember using any Wolhaupter plates having a perfectly flat bottom without any flanges or ribs at all?

A. No, sir, I don't remember to have used that plate you speak of.

X Q. 213. Did you ever use any plate with a perfectly flat bottom surface?

A. You mean flat on the bottom where it rests on the tie?

X Q. 214. Where it rests on the tie?

A. Yes, we have used the flat bottom plate.

X Q. 215. What kind of top surface did those plates have?

A. It had the grooved surface on top.

423 X Q. 216. One or more grooves?

A. I think there was two or three grooves.

X Q. 217. And did the base of the rail rest on the space between the grooves.

A. Yes, sir.

X Q. 218. And was that space flat or curved, as you remember?

A. If I remember right, it was flat.

X Q. 219. And did you have a rail sustaining shoulder on that plate?

A. Yes, sir, on the outside.

X Q. 220. About when did you first begin to use such a plate as that?

A. Must have been about three or four years ago.

X Q. 221. Did you have any name for that kind of a plate? How was that plate known to you?

A. Called it the flat bottom plate.

X Q. 222. Did you use a great many of them?

A. Yes, sir, we used several thousand of them. They replaced the Wolhaupter.

X Q. 223. How did they compare with the Wolhaupter?

A. Well, we consider them a great deal better plate than the Wolhaupter.

X Q. 224. How was the effect of that plate on the tie?

A. Very easy.

X Q. 225. Very easy?

A. Yes, sir.

X Q. 226. Kept the track in gauge?

A. No, not very well on the sharp curves.

X Q. 227. Why not?

A. On account of the smooth surface on the bottom.

X Q. 228. Was that the only trouble with them that you experienced that it wouldn't keep the track to gauge on curves?

A. That was the main trouble, otherwise the plate was about all right.

X Q. 229. You spoke of a plate that Mr. Faulkner had with him when he talked with you in 1904; was that plate any different from these two that you have identified which are marked Exhibits B and C, if so in what respects did it differ?

A. They were something similar to those plates.

X Q. 230. That is, the plate that he had was something similar to these two plates?

424 A. Yes, sir, the plan was about the same.

X Q. 231. You are quite sure there was no difference in the construction?

A. Well I can't remember now exactly but it was a plate on about the same plan of these two plates. It had a shoulder and I think the ridges crossways the plate.

X Q. 232. Did you make any formal report in writing on the use of those thousand plates to any official higher than you on the road?

A. Why I think I did.

X Q. 233. Recommend their use?

A. Recommended their use.

X Q. 234. And no more were ever sent to you?

A. There was no more ever sent.

X Q. 235. Did you ever make a requisition for any more than the thousand that came to you for a test?

A. Why I recommended as you see by this letter that we get those plates, as I considered them the best; but we didn't get them.

X Q. 236. Is this letter on page 416 of your letter book, the formal recommendation that you had in mind a minute ago?

A. Yes, sir.

X Q. 237. This is the only recommendation in writing that you made with respect to this thousand plates, is it?

A. It is, I think.

X Q. 238. You think those plates would have lasted better if they had been heavier at the shoulder, do you?

A. Yes, sir, thicker and heavier.

X Q. 239. Those that were broken, broke at the shoulder?

A. Yes, sir, they broke crossways at the shoulder.

X Q. 240. Did you observe any of those plates buckling or bending up at the ends?

A. No, sir, they didn't buckle very much.

X Q. 241. Did they at all?

A. Well, slightly; the plate wasn't heavy enough, that was the only trouble I saw with the plate, otherwise the plate was all right.

X Q. 242. By the way, Mr. Elliott, those 66 pound rails that these thousand plates were laid under the first time, did they have a perfectly smooth bottom surface, or was there a small, slight burr due to the *t*olling of the rail?

A. I think after they wore a short time they were perfectly smooth on the bottom.

425 X Q. 243. But at first they had a slight projection due to where the rollers met in rolling?

A. Oh, there might have been some small light scale there, you understand the steel wasn't new when we put those plates on, been in there a short time, and then the rail was pretty smooth on the bottom when those plates were inserted.

X Q. 244. In those days new rails didn't come to you perfectly true and flat on the bottom flange, did they?

A. Oh, yes, they come pretty smooth and flat. There may have been some scales on them, you know.

X Q. 245. Please look at that piece of a tie marked Exhibit A, take it in your hand and look at it carefully and tell me if you think it is in the same condition that it was in when you shipped it to Mr. Faulkner?

A. Yes, sir, I should say that this is the same piece and in about the same condition.

X Q. 246. Why do you say "about the same condition;" do you notice any change in its condition?

A. No, sir, I can't notice any change.

X Q. 247. Is that a clear piece of wood or is there a knot in it?

A. There are some knots.

X Q. 248. Would the presence of knots make any difference in the splitting or cracking of the tie or its wearing?

A. Well, yes, I believe the clearer a piece of wood is the better service it gives as a tie.

X Q. 249. And a tie like that, for example, that has a knot in it, or knots in it, would be more likely to be split and injured by the action of the flanges than otherwise, would it not, than a clear tie would?

A. No. No, sir, the flanges would work on a clear piece of timber just as bad as they would on a knot. Switch ties are generally pretty clear, they are sawed, and that is where we had the most trouble with them, was on the switch ties in the yards where the traffic and business was heavy.

X Q. 250. You spoke of having had experience with a number of styles of tie plates since 1892; you mentioned, I believe, the Servis, the Wolhaupter and "a good many sample tie plates." Just what were these other tie plates that you had in mind?

A. Well, we had the Glendon flange and we used a few of the Fox. And I can't remember. I think there was several
426 different kinds; I, being on the mountain division, they would send their plates there to be tested.

X Q. 251. What do you mean by the Glendon flange tie plate?

A. Something similar to the Wolhaupter, it has got a flange on the bottom just about the same, and the grooves on top running lengthwise.

X Q. 252. About the same kind of grooves?

A. Something similar, yes, sir.

X Q. 253. Well, what if any difference was there between the Glendon flange and the Wolhaupter plate?

A. If I remember right the outside of the plate projected out over the flange more than the Wolhaupter did. Something similar to this plate, Exhibit O, if this little outside ridge was cut off square.

X Q. 254. That was about the only difference that you now recall between the Glendon flange and the Wolhaupter plate, is it?

A. That is about all, they were about the same plate.

X Q. 255. What about this Fox plate, what kind of a plate was that?

A. That was a plate, if I remember right, the metal was cut and bent down sharp, didn't amount to anything, it was no good. Wasn't heavy enough. The punches for the spike holes were cut and bent

down you know, to form little claws on the bottom to hold the track from spreading.

X Q. 256. The Glendon flanged plate, in your opinion, was about as undesirable as the Wolhaupter, was it?

A. Yes, sir, perhaps more so, it cut the ties badly.

X Q. 257. Did you go over any part of the Santa Fe track with Mr. Faulkner in 1904 when he was making his investigation?

A. No, sir, I don't think I walked with Mr. Faulkner that day.

X Q. 258. Did you go over any part of the track with Mr. F. C. Webb?

A. Yes, sir.

X Q. 259. What part of the track was that?

A. We were on the mountain between Lamie and Glorietta, where we were laying the 85 pound rail.

X Q. 260. About when was that?

A. It has been three or four years ago.

Mr. Brown: I think that is all, Mr. Reed.

427 Redirect examination by Mr. Reed:

R. D. Q. 261. I wish you would look at the tie section marked Exhibit A, and the tie plate Exhibit B, and state whether in your judgment that tie plate is the one which was actually on that piece of tie in track, if you can remember?

A. I can't say that that is exactly the plate, but it is a plate of the same pattern.

R. D. Q. 262. Examine the same section of tie and the tie plate Exhibit B, which I now place thereon, and state whether that is a fair sample of the way in which the ties and plates of this kind were, as the result of being placed in the road and operated thereon at this second place, in contact with the tie?

A. Yes, sir, that is a fair sample of the way those plates were inserted.

R. D. Q. 263. And when you spoke in your direct examination of the tie plate being embedded in the tie, did you refer to the plate itself being embedded clear down, or to the ribs below?

A. It takes only about three or four trains over it to embed the ribs in the tie, and it will take probably several months to embed the entire plate in the wood of a pine tie, a plate of this description or larger, something like the plate we now are using.

R. D. Q. 264. That is, do you mean to embed it to the extent that is shown on this specimen?

A. Yes, it will take I should say three or four months to embed that plate in like it is there in that tie, and then after that why it don't go down very much farther.

R. D. Q. 265. When you in your cross-examination, spoke of Exhibit O being the nearest like the Wolhaupter plate which was employed, do you mean to say that the Wolhaupter plate you used had these projections at each end on the upper surface which operate as a series of shoulders?

A. Oh, no, there was no shoulders or projections above the plate.

R. D. Q. 266. You were asked by counsel as to the condition of the ties in this curve east of Las Vegas where these plates like Exhibit O were changed to, and replied that when the 85 pound rail was laid thereon there were some of the ties rotten; in your judgment was the rottenness of the ties that were so taken out in any way due to the operation of these tie plates like Exhibit O, thereon?

A. I think not.

428 R. D. Q. 267. What is the fact as to the kind of traffic and power used at the points where these thousand plates were first laid and the point to which they were transferred?

A. The same power.

R. D. Q. 268. And what is it as to being light or heavy, the traffic and power?

A. It is what we consider heavy power and heavy traffic.

R. D. Q. 269. What was the objection, in your judgment, to the flat bottomed plate with the shoulder and corrugated top which you said you used in considerable quantities some years since?

A. The flat surface on the bottom would not hold the plate. The plate slid out on account of the flat surface on the bottom.

R. D. Q. 270. And what was the result on the track or rails?

A. The track spread on the curve.

R. D. Q. 271. A few moments since you spoke of clear ties, sawed, used in switches, and said substantially, that you had on those ties the greatest trouble with it or them. To what did you refer by the expression, "it or them"?

A. Well, I should have said that we had more trouble on the switches in the yards where we used the good, square sawed switch ties, than we did out on the line.

R. D. Q. 272. Well, more trouble with what?

A. With the rails spreading, and that was on account of the tie being cut up with the plate.

R. D. Q. 273. What kind of a plate did you refer to?

A. The Wolhaupter plate.

R. D. Q. 274. Now, in describing the action of the flanged plates, you said that it was due, in your judgment, in part at least, to the length of the flange; did you refer to the length of the flange longitudinally or up and down, its depth?

A. Well, if the flanges had been shorter I don't think they would have cut the tie so badly.

R. D. Q. 275. You mean shorter in length longitudinally?

A. I mean up and down.

R. D. Q. 276. When you were speaking of those flanges being long you had in mind their length up and down?

A. Up and down, yes, sir.

R. D. Q. 277. Do you recall the depth of the flanges on the Wolhaupter plates?

A. I think they were about three-quarters of an inch, perhaps a little shorter.

429 R. D. Q. 278. Were the bottoms of the Wolhaupter flanged plates that you used, between the flanges, straight or arched, as they are in Exhibit O?

A. If I remember right, they were arched.

R. D. Q. 279. And your idea is that discarding the shoulder projections at the ends of Exhibit O, the top surface of the Wolhaupter plate was similar to Exhibit O?

A. Yes, sir, something similar; it was sawed off square across.

R. D. Q. 280. But the top surface, as you recollect it, was similar to the one of Exhibit O?

A. Yes, sir, as I recollect it.

R. D. Q. 281. Except the projecting shoulders?

A. It looked more like that plate, Exhibit O, than any other plate we have here.

R. D. Q. 282. What was the direction of the flanges on the Wolhaupter and Glendon flanged plate with reference to the tie?

A. The same, lengthways.

R. D. Q. 283. And, in your judgment, was any of the unfavorable action of those plates due to the fact that the flanges were parallel to the grain of the tie instead of crosswise of the tie?

Mr. Brown: Objected to as leading.

A. Yes, sir, I believe they cut the tie more.

Recross-examination by Mr. Brown:

R. X Q. 284. These thousand plates that you used, were all the same size, were they not?

A. Yes, sir.

R. X Q. 285. So that they would be practically interchangeable one with the other, would they not?

A. Yes, sir.

Mr. Brown: That is all.

Mr. Reed: That is all.

DANIEL ELLIOTT.

Adjourned to 2 o'clock P. M. of the same day.

430 November 23, 1909—2 o'clock p. m.

Met pursuant to adjournment.

Present as before.

E. O. Faulkner resumed the stand for further cross-examination by Mr. Brown:

X Q. 408. Please tell us again the condition as you found it when you went down the track with Mr. Van Dorn?

A. I saw ties in the track which had spread so that there were tie plugs on the outside to bring it back again, practically in rows. On some of the wide ties they had two tie plates on but even with those the track had apparently pulled out of gauge. I remember that very well because of an incident that was not put in the report. As we were in the middle of the mountain one of the big, heavy freight trains came down, and we gauged the track immediately after it passed, and it showed that it had been thrust out where some of

these tie plates were, and of course the section hand that was with us immediately put it in shape, put it back again.

X Q. 409. You didn't mention that incident in your report at the time?

A. No, I didn't mention that, but I recall it, just at the moment.

X Q. 410. Were you present when the change was made on this section of the road from the 75 to the 85 pound rail?

A. I was not. The 85 was in the track then and the 75 laying along side, and the tie plates which had come off the 75 were there in piles, every here and there, collected for disposition.

X Q. 411. And those were what plates?

A. Those were the flanged plates, Wolhaupter, mostly, and here and there we saw a Glendon flange in the pile.

X Q. 412. The condition that you found those plates in at that time was due to the fact that the plates were too thin, was it not?

A. The plates, unquestionably, were too thin for the traffic that passed over them, but they were the same thickness as the Glendon rib plate, they are about 3/16 of an inch thick, which had lasted under similar traffic west of Las Vegas; I mean the ribbed plate.

X Q. 413. The Glendon rib plate had lasted, you mean?

A. Yes.

431 X Q. 414. How do you know that?

A. Well, from having been told by the Roadmaster when he put them in, and the number that I found still in good condition after twelve years' service.

X Q. 415. How do you know they were there after twelve years' service, from hearsay or from your own knowledge?

A. From what the Roadmaster, Dan Elliott told me.

X Q. 416. That is what I thought. Now please confine your testimony to things that are exactly and actually within your own knowledge and we will get along a little faster. And I might, at this point, request you to lay aside your 1904 report and testify from your memory, if you please.

A. Can I not refresh my memory by that report, as you are reading from the copy?

X Q. 417. Not on my cross-examination.

A. Oh, all right.

Mr. Reed: Counsel for defendants instructs the witness that if he desires at any time to refresh his memory he can, upon stating that fact, do so.

X Q. 418. What was the condition of the ties that you found in the track west of Las Vegas where these four hundred and some odd, so called Glendon plates were observed by you?

A. I found them in much better condition than where the flanged plates were in use.

X Q. 419. Were they treated ties?

A. Presumably so, yes.

X Q. 420. Don't you know whether they were treated or not?

A. I can only assume they were. I beg your pardon,—I had no

means of my own from looking at them, of knowing whether they were treated or untreated.

X Q. 421. Did you take any of those ties out of track and have them cut into for your personal inspection at that time?

A. I did.

X Q. 422. Which ones?

A. This was one of the ties.

X Q. 423. This one, Exhibit A?

A. Yes, Exhibit A.

X Q. 424. Is that the only one you personally examined at that time?

A. I think I had another cut.

X Q. 425. What became of the other one?

A. Probably after examining it, it was left behind there. I only brought the one piece with me.

432 X Q. 426. Was the condition of that other tie as good as the condition of this Exhibit A tie?

A. Yes; it was not left behind for any reason only that the one piece was sufficient to show my point.

X Q. 427. Was that other tie a tie with a knot in it or was it clear wood?

A. Oh, it was just the same general average of ties there.

X Q. 428. You don't remember at this time whether or not it had a knot in it?

A. Oh, no.

X Q. 429. Do you remember whether or not it was split in any way like this present tie is?

A. No.

X Q. 430. And this tie, Exhibit A, you think was split somewhat since it was taken out?

A. I think those checks in the middle are owing to extra seasoning since it was taken out and cut.

X Q. 431. Have you any means of knowing whether Exhibit B or Exhibit C were the identical plates that were taken off that particular tie Exhibit A?

A. Nothing only what I have said, that the tie was taken out by me and brought down to Las Vegas station and there packed in a package and sent by express to my office, and with the exception of my bringing it or sending it once or twice to Chicago to our officials to see the plate and the tie and then sent back, it has been in my office ever since until a day or two ago.

X Q. 432. But you can't say definitely whether Exhibit B or Exhibit C plates or either one of them was the identical plate that was on Exhibit A tie?

A. I believe they are.

X Q. 433. But you have no means of knowing that definitely?

A. I never saw any plates like them, and from my recollection at the time and seeing the plate and the tie and referring to it at different times ever since it was kept there I have a very clear remembrance on my part that it is the same tie and the same plate.

X Q. 434. As far as you know only two plates were taken out of that lot of 451 that you examined?

A. By myself.

X Q. 435. Did you ever see or hear of any of the others being taken out?

A. I saw some of them after the rail was taken out, after
433 the 66 pound rail was taken out and replaced with the heavy one, I saw some of those plates in the Las Vegas yard under 66 pound rail there.

X Q. 436. Have you seen any of them since?

A. I have not. I was at Las Vegas probably two months ago for the express purpose of looking around to see whether they were there, but the rail had been taken out and none of the tie plates were there.

X Q. 437. You couldn't find them?

A. No.

X Q. 438. Have you hunted any other place for these plates?

A. I haven't.

X Q. 439. Know anybody else that has?

A. I do.

X Q. 440. Who?

A. The Roadmaster for that district, by report of a letter received to that effect.

X Q. 441. By the Roadmaster you mean of the Santa Fe system?

A. Yes, the Roadmaster who is now in charge of that district.

X Q. 442. How did you happen to go down there two months ago to look up these particular Glendon tie plates?

A. To see if there were any more.

X Q. 443. What interest did you have in that fact.

A. I was requested to do that.

X Q. 444. By whom?

A. Probably it was Mr. Hodges. I say probably, because this matter of tie plates had been discussed by Mr. Storey and myself, by the bridge engineer and myself, and with Mr. Hodges; but as I remember, it was he that asked if there were any more in the track and I went out there personally to see.

X Q. 445. Discussed, you mean, with reference to this suit, or these suits?

A. With reference to that tie plate.

X Q. 446. And the use of that information, whatever it might turn out to be, in these suits in this litigation, you mean?

A. Probably.

X Q. 447. You have made a somewhat considerable study of ties and timber and preservatives for ties, haven't you?

A. Yes, I have given a good deal of attention to that particular work.

434 X Q. 448. You are considered somewhat of an expert on that subject are you not?

A. Well, I don't know, it all depends. Some people expect more from a man that has studied, than others.

X Q. 449. I wish you would tell us, please, what in your opinion

is the effect on a railroad tie, so far as checking and otherwise injuring the tie and making it unfit for use, is concerned, of a flat plate, and then of a plate provided with flanges or ribs on the under side.

A. I think the result would be more disastrous to the tie, with the flanges, than it would with a perfectly flat plate.

X Q. 450. And this without regard to whether the tie was a treated tie or not?

A. In both respects——

X Q. 451. In both cases the result would be the same?

A. Yes.

X Q. 452. Now just in what way will a flanged tie plate injure the tie?

A. Well, the more you cut up or cut into the surface of the tie and the greater depth you cut into it, the worse it is, so it affects the strength and the lasting qualities of that tie.

X Q. 453. Well, you haven't explained to me yet just in what way it affects the strength and lasting qualities.

A. Probably I can't. I should be glad to explain any way I can, if you will point out what it is I have failed in. A tie is supposed to hold the rail up, and the more you chop into that under the rail base the less able is it to do so.

X Q. 454. Would it make any difference with the life of the tie in your opinion, whether the tie plate having this under flange was forced into the top of the tie immediately upon its being laid there in position, or whether it was gradually forced into it by the passing load?

A. I should think it would.

X Q. 455. Well, in what way?

A. I believe it would last longer and be better in the case of being forced in by one operation, or by a machine, than it would by finding its own seat by the power.

X Q. 456. So that two tie plates of the same construction on a given piece of track on, we will say, adjoining ties, one properly set when the tie plate was put in track and the other improperly set and allowed to be forced into position by the load, might produce two different effects on those two ties?

A. Yes, the one sooner on account of its improper method of application.

435 X Q. 457. And would either of those methods of application of the tie plate to the tie be modified if the tie was a treated tie, or different in the case of a treated tie than in the case of an untreated tie?

A. I believe the result would be the same as I understand it in a treated tie it would be better if the plate was forced in by a machine than it would if it was allowed to seat itself. Is that what you mean?

X Q. 458. The chemical treatment of a tie has an effect on the tie plate has it not?

A. Certain chemical treatments, yes. I will follow it out: The zinc chloride treatment has a certain effect on the iron tie plate or steel.

X Q. 459. And that is not a beneficial effect, is it, on the tie plate?

A. No, it is not.

X Q. 460. And in the case of those tie plates that you found damaged in the course of your inspection, on which you base this 1904 report, did you find that the chemical treatment of the tie had affected the tie plates?

A. I did in some of them, especially where they had been sometime in the track, but in some places they had only been in two years and then there was not very much damage in that short time to the plate. But where I came across some that had been longer in service, the corrosion was of course necessarily greater.

X Q. 461. During the period of your entire connection with the Santa Fe system there h[illegible] considerable attention paid to this matter of the treating o[illegible] there not?

A. Yes.

X Q. 462. In the constant endeavor to find something that would really preserve the tie?

A. That is right.

X Q. 463. And the various methods or processes have been changed from time to time, I take it?

A. Well, we haven't changed much ourselves. We started in eighteen—well, I can't testify we commenced in 1885, because I wasn't with the Santa Fe, but if you will allow me I will say the record shows the Santa Fe started treating in Las Vegas in 1885 and with zinc chloride, and putting also some glue and tannic acid in but they were put in not because they are preservatives at all, because they are not. The zinc chloride is a salt, and these were supposed to form a plug which held the salt in the wood. Every few years the glue and the tannic acid would be cut out,
436 but the same preservative continued and in 1897 we started the zinc chloride in Texas and continued that until 1905 when we started the creosoting of ties, and now the Las Vegas plant is closed and we are creosoting certain classes of ties, treating others with crude oil at the new plant at Albuquerque, and those are practically the only two changes. Of course we have tested other preservatives and methods with a view of seeing which was the best, but as a general proposition those are the two treatments we have.

X Q. 464. In your direct examination you said there were two types of Glendon plate, one the Glendon rib and the other the Glendon flange; was that the common trade name for both of those plates at that time?

A. At that time the Glendon rib had gone out of use and that was when I was on the Pennsylvania track with Mr. Schluyter of the Dilworth Porter Company, and he told me that when that plate was supplied they used to call it the Glendon rib and that is the reason I have used that name.

X Q. 465. By whom did you understand that Glendon flange plate was made?

A. Dilworth Porter & Company.

X Q. 466. And who made the Glendon rib plate?

A. Dilworth Porter & Company.

X Q. 467. You spoke in your direct examination of a tie plate that you had from Dilworth Porter & Company, and which I think you said you showed to Mr. Elliott.

A. Yes.

X Q. 468. That was what plate?

A. That was one of the Glendon rib plates that was made for use on the Pennsylvania, east.

X Q. 469. And does any one figure of the blue print drawing marked Defendants' Exhibit M, show a section of that plate?

A. Yes, print 56,518 shows it.

X Q. 470. The blue print that you referred to as 56,518 is Exhibit M?

A. Yes.

X Q. 471. Now I ask you which section or figure of the blue print shows the section of the tie plate that you refer to?

A. Well, they are all the same, excepting for a different sized rail. One is 70, one 85 and one, 100. As near as I can see it would be letter "B," because it was an intermediate plate.

437 X Q. 472. And this model that has been introduced as Exhibit M[1], what does that represent?

A. That represents the same plate.

X Q. 473. Then you had from Dilworth Porter & Company the Glendon flange plate?

A. No, the Glendon rib.

X Q. 474. The Glendon rib plate?

A. Yes.

X Q. 475. And how closely does that model Exhibit M[1], or the drawing, figure B of Exhibit M, correspond with the Glendon plates that you saw in use out near Las Vegas?

A. This Exhibit M[1] has no depression on the surface of the plate which the other had, and there is a depression on the under part of it which those I saw in New Mexico did not have. This depression underneath goes into the plate between the ribs.

X Q. 476. Now the Glendon plates that you saw in the Pennsylvania line during your investigation in 1904, were, in cross section, like the blue print Exhibit M?

A. They were.

X Q. 477. That is, they had the depression on the under side of the plate between the ribs, and no depression on the top side of the plate?

A. That is the case.

X Q. 478. The top side of the plate was flat?

A. Perfectly flat.

X Q. 479. When the Glendon plates were in track at Las Vegas and you examined them there, could you tell at that time whether or not the upper surface had a depression in it?

A. Not when they were in the track, no.

X Q. 480. Did you know at that time that there was such a depression there?

A. I never noticed it at that time.

X Q. 481. Afterwards, when you saw these plates again in the Santa Fe switch yards at Las Vegas, did you notice that they had the depression in the upper side?

A. No, I couldn't see them; they were in use.

X Q. 482. When did you first learn that the Glendon plate referred to had a depression in its upper surface?

A. When my attention was called to it in Chicago here.

X Q. 483. How long ago was that?

A. Oh, probably two months ago. I will say that plate, Exhibit C, which shows the depression very much clearer and plainer
438 than Exhibit B, had never been brought to any one's attention until probably a couple of months ago. It had stayed all the time from its arrival in Topeka up to the time I looked for it, in my office cabinet at Topeka, and when I came to read over the report which I had not done from the time it was made in 1904 up to probably a couple of months ago, the fact was brought to my recollection that I had taken two plates out, and I immediately went to my cabinet and found the second plate there where it had remained all the time, not having been brought into the discussion because Exhibit B was the plate that was on Exhibit A and always accompanied Exhibit A in the discussion and talk, and it does not show the depression anything like so clearly on Exhibit B as it does on Exhibit C, and for that reason it was not so quickly noticeable to any one handling it in a general way as Exhibit C would have brought it up.

X Q. 484. Do you know, of your own knowledge, why those thousand plates were sent out to Mr. Elliott to be tested?

A. I do not. In fact, I did not know they were there until he told me.

X Q. 485. Do you know, of your own knowledge, whether any more plates of that same character were ever used on the road of the Santa Fe system?

A. Not to my knowledge, or that I ever heard of.

X Q. 486. Now these Glendon plates that you saw in 1904 in use in track, were they all on one part of the track, that is, on a continuous curve or continuous tangent?

A. Yes.

X Q. 487. Were they both on curve and tangent?

A. I only saw them on the curve. I saw all that were there and as my recollection goes, they were only on curve. Some had been broken and taken out and flanged plates had been put right in their place, so that with that exception they were continuous as far as they went.

X Q. 488. And by "some" about how many do you have in mind?

A. Well, there would not be very many. Probably a dozen.

X Q. 489. And what was the character of the traffic on the road at that point?

A. Well, that was our mountain division and with the grades it carries our heaviest engines. I suppose at the time our heaviest engine would be the 900 type and that takes 247,000 pounds on ten

drivers, that is five pairs, about 48 to 49 thousand pounds on each axle.

X Q. 490. And what was the grade and curve at tnat point?

439 A. There are sharper curves on the line. Mr. Elliott told me at the time it was a six degree curve. We have them as sharp as ten degrees.

X Q. 491. That was what you would call a heavy curve, was it not?

A. Well, not for that mountain district out there. I assume they were put on there—if you will allow me—because that was the hardest test that was possible at the time on account of their being used for 66 pound rail and we were then taking the 66 pound up and substituting 75 and 85, and of course it would only be possible to test them wherever there was 66 pound rail.

X Q. 492. And those were pine ties that were used at that point were they not?

A. Yes, sir.

X Q. 493. When you took this Exhibit A tie out of the track how did it compare as to condition with some of the other ties; was this an average tie or was it better or worse or what?

A. It was an average tie.

X Q. 494. Why didn't you select the worst example that you could find at the time?

A. Well, I selected,—I took two out. I took one that had been in the track since 1886 to show the effect of the tie plate on an old tie. This tie shows two figures, two-eighths on the end, and at that time we were not using marking nails on the ties which were treated, they were stamped in with a hammer showing the figure of the year, and that was clearly discernible on the end of the tie, and that tie had then been in the track from 1888 to 1900 without a tie plate, and the tie plate put on in 1900 and kept on till 1904, and it was for the purpose of showing the effect of that tie plate on an old tie, not to show the best or the worst. I had a special object in that particular point, as I have explained.

X Q. 495. And this piece of timber here, Exhibit A, is not the 1888 tie then?

A. That is my understanding, it is the 1888 tie.

X Q. 496. This is the 1888 tie.

A. I think so, yes.

X Q. 497. What did you do with the other tie that you took out of the track?

A. Oh, I really couldn't say now what became of it. I may have brought it to Chicago and shown it and let it pass. We are

440 all the time in our investigation getting pieces of ties or timber sent and unless there is some special object in keeping it, it is not kept. That was a common pine tie that had been twelve years in the track and was in that condition four years after use of tie plate; that was the special object of keeping it.

X Q. 499. And the other tie was not in as good condition as this, was it?

A. Oh, it was a new tie. It had been put in in 1900, it bore the mark of 1900 and there was no object in keeping that. If some time when you are in Topeka you will come up to my office I will show you timber that was put in in 1875.

X Q. 500. That would be very interesting, but I am afraid the court would not be interested in that phase of the investigation.

A. They are interesting to us and we keep them.

X Q. 501. Look at that plate Exhibit C, state again what you observed with respect to the wearing of the plate by means of the rail base?

A. The rail base seems to be worn each side of the depression.

Mr. Cooke: You mean the plate?

A. Yes, the plate seems to be worn by the rail base each side of the depression.

Mr. Brown:

X Q. 502. Why is that so worn, if you know?

A. I presume by friction.

X Q. 503. How about Exhibit B, does that plate show similar wear?

A. Yes, it does.

X Q. 504. As much as the other one, Exhibit C?

A. Exhibit B is more buckled than Exhibit C. By buckled I mean the outer ends are bent up so that you can't seat it as well as you can the other.

X Q. 505. Did you observe any of the other Glendon plates in track buckled to the same degree or more than this Exhibit B plate is buckled?

A. Some of them were buckled, yes, but as to any relative condition I couldn't tell very well unless I had them out of the track and placed them on the same plane. Some were also broken at the shoulder, quite a number. I think I mentioned,—I know I mentioned the number that were broken.

X Q. 506. This Exhibit G, called the Sacramento plate; when did you first see this exhibit?

A. In the spring of 1904.

X Q. 507. Where was it you saw the blue print of the
441 Southern Pacific tie plate that you referred to on your direct examination?

A. Of the Sacramento plate or of the later plate?

X Q. 508. The later plate, not the Sacramento?

A. It must have been in some of our offices, but I don't recall where. The tie plate has been under general discussion, you know, with us, for two or three years past.

X Q. 509. I am speaking now of the tie plate that the Southern Pacific made and which you say was licensed?

A. I don't recall which office that was in.

X Q. 510. Did you see any drawing of such a plate when you were out west?

A. Oh, no, not at that time; not in 1904, no, because at that time their standard was the flanged plate.

X Q. 511. Then they went to the Sacramento plate?

A. No, the Sacramento plate antedated the flanged plate.

X Q. 512. And from the flanged plate they went to the plate of this blue print?

A. To the plate of this blue print, yes.

X Q. 513. And that is the same plate that you saw a cut or blue print or picture of in Mr. Bell's office?

A. In Mr. Bell's office, as my recollection goes, because I pointed it out and we had the conversation related.

X Q. 514. Can you fix the time when you saw that blue print?

A. I don't know whether it was in 1906 or as I said, in 1907 prior to August.

X Q. 515. And you had seen it before you saw it, or before you saw a similar picture in Mr. Bell's office?

A. I had seen it, yes.

X Q. 516. And you don't remember the date when you saw it in Mr. Bell's office?

A. I saw the catalogue in Mr. Bell's office.

X Q. 517. And that illustrated a similar plate?

A. Yes.

X Q. 518. And that plate had ribs on the under side, didn't it?

A. No.

X Q. 519. No ribs?

A. No ribs.

X Q. 520. That was a flat bottom plate?

A. That was a flat bottom plate.

X Q. 521. And it had a shoulder on the upper surface, did it?

442 A. Yes.

X Q. 522. And corrugations on the upper surface?

A. As I remember, they were square. They were not fluted; they had ribs on the upper surface.

X Q. 523. Ribs?

A. Yes.

X Q. 524. Which made corresponding depressions between the ribs?

A. Yes.

X Q. 525. That is the rail bearing surface was square across the top, flat?

A. Yes, the rail bearing surface was flat, but between the ribs there was an indentation that the base of the rail did not rest against.

X Q. 526. And those indentations ran in a direction parallel with the rail, did they not?

A. Yes.

X Q. 527. When you suggested the ribs on the plate that you recommended in your report of 1904, what direction were those ribs to take?

A. Across the tie, parallel to the rail.

X Q. 528. Parallel to the rail?

A. Yes.

X Q. 529. And that was so stated in your report, was it not?

A. I believe so, at all events I was asking for a plate similar to the Glendon rib plate, and submitted a blue print a few days afterwards, which is Exhibit I.

X Q. 530. Now this Exhibit I is the plate that you recommended, is it, in your report?

A. Yes, in connection with the report.

X Q. 531. And, as I understand it, that plate was not adopted by the Santa Fe system?

A. No.

X Q. 532. Were any of them ever rolled and tested?

A. About two years afterwards, yes.

X Q. 533. Tested on the Santa Fe?

A. Yes.

X Q. 534. Do you know by whom they were rolled?

A. John Sellers Company. Sellers Manufacturing Company, I think it was.

X Q. 535. And what part of the system were they tested on?

A. They were, so far as I know, sent to the district that
443 had requested them and asked for them, that was the Roadmaster Johnson's district on the Supai mountain division, between Winslow and Seligman, Arizona.

X Q. 536. That is the lot of one hundred or two hundred thousand that you spoke of in your direct examination?

A. Yes. There was two lots I spoke of. They asked for the rib plate and first of all a lot of the waffle plates were sent them, and following that a similar lot of the first plate recommended was afterwards sent and so far as I know to the same territory, because that was the territory that asked for them.

X Q. 537. Do you know whether there was any report made on those tests?

A. A report was made to me by the Roadmaster.

X Q. 538. Verbal or written?

A. Verbal.

X Q. 539. And were any further plates of either of those two types ordered and used by the Santa Fe system?

A. Not at that time.

X Q. 540. How soon after that were plates like the waffle plate that you have mentioned, Exhibit N, or the rib plate that you recommended, like blue print Exhibit I, how soon were any of those afterwards used or put on the Santa Fe?

A. I think they were put in in 1906.

X Q. 541. About what quantities?

A. About one hundred or two hundred thousand of each.

X Q. 542. Now are you speaking of the same lot of one hundred or two hundred thousand that you spoke of before?

A. No, sir, I am speaking of two different lots.

X Q. 543. Two different lots of each plate?

A. No, one lot of each plate. One lot of either one hundred or two hundred thousand of the waffle plate, and one lot of either one hundred or two hundred thousand of Exhibit I. The waffle plate is Exhibit N.

X Q. 544. And those two lots were the only two lots of these two types of plates that were ever secured and used were they, on the Santa Fe?

A. So far as I know, yes.

X Q. 545. Is it not a fact that along about the period of your report a standard plate was adopted by the Santa Fe system and used for about four years?

A. Yes.

X Q. 546. And that plate is shown in the blue print Defendants' Exhibit J, is it?

444 A. It is.

X Q. 547. By what name was that plate known?

A. Well, generally known as the flat bottomed plate.

X Q. 548. By whom was it rolled for the Santa Fe Company?

A. I couldn't say who rolled it.

X Q. 549. By whom was it sold to the Santa Fe Company?

A. Mr. Wolhaupter.

X Q. 550. And what company or concern did he represent, if you know?

A. The Independent Railway Supply Company.

X Q. 551. And after the adoption of that particular form of plate shown in Exhibit J, the Santa Fe used no other form of tie plate until along about 1906 or 1907 you say, when these Sellers plates were tested?

A. They also used those at the same time.

X Q. 552. You mean they also used this plate Exhibit J?

A. Yes. It didn't cut out Exhibit J.

X Q. 553. The Exhibit J plate was the standard plate for that period?

A. Yes.

X Q. 554. Aside from the Sellers plates those two lots of the Sellers plates that were used, were there any other plates used except this Exhibit J plate?

A. Not that I know of. The General Manager out there on that mountain district favored the rib at the bottom and when his Roadmaster made a complaint that he couldn't hold his track in gauge on the Supai mountain, he put in a requisition for these plates specially, and so far as I know the two lots referred to were sent out to that territory and used there, and I don't know of any other plates being purchased during the time Exhibit J was standard, except those two lots.

X Q. 555. Please look at Defendants' Exhibit Q and compare it with Complainant's Exhibit 19, and see whether they are blue prints from the same tracing, if not, what if any differences are there?

A. They are blue prints from the same tracing.

X Q. 556. Now please look at Defendants' Exhibit P, blue print, and Complainant's Exhibit 20, blue print, and state whether or not they are blue prints from the same tracing or if there are any differences, point them out.

A. They are the same; I don't see any difference.

X Q. 557. These blue prints, Complainant's Exhibits 19
445 and 20, show a tie plate with corrugations in the top surface, do they not?

A. Yes, different shapes of corrugations.

X Q. 558. And Defendant's Exhibit J shows a tie plate with corrugations in the top surface, does it not?

A. It does.

X Q. 559. So far as the top surface of the tie plate is shown on these blue prints Complainant's Exhibits 19 and 20 are concerned, the differences between them and the standard plate used by the Santa Fe road as shown by Exhibit J consists principally in the shape of the corrugations?

A. And number.

X Q. 560. And number, does it not?

A. Shape and number.

X Q. 561. So far as the bottom of the tie plate is concerned, the difference between the standard tie plate shown on Exhibit J and the tie plate recommended by you, Exhibit I, consists in the two ribs on the bottom of Exhibit I plate, does it not?

A. It does.

X Q. 562. And I understand you to say in your direct examination that after your return from the trip abroad and you were in conference with Mr. W. B. Storey in the devising of tie plates, you suggested the placing of the two ribs on the bottom of the plate in a direction parallel with the rail and across the tie, similar to your plate as shown in Exhibit I?

A. Yes.

X Q. 563. And such ribs are shown on the blue prints Exhibits P and Q and numbers 19 and 20, are they not?

A. They are.

X Q. 564. And these three designs of plates shown on the blue prints, Complainant's Exhibits 19 and 20, and Defendants' Exhibits P and Q were the result, as I understand you, of Mr. Storey's efforts in designing a tie plate in connection with your suggestions in the matter?

A. They were, but about all I had to do with it was the urging that the rib should be put on the bottom and that the tie plate should be enlarged in size as compared with our previous standard. The ribs on top I had nothing to do with, those were Mr. Storey's own designs.

X Q. 565. What was the purpose or object Mr. Storey had in designing these plates, as you understand it?

446 A. Well, I would sooner you would ask Mr. Storey what his purpose was. What he was designing these plates for?

X Q. 566. Yes.

A. For use.

X Q. 567. As you understood it?

A. Why, for a new standard.

X Q. 568. Did you ever talk with Mr. Storey about the object he had in producing these plates, designing them?

A. Oh, yes, of course I did.

X Q. 569. And did you ever tell anybody what that object was?

A. Oh, I may have, I don't recall it. We talked with a number of people at that particular time. The object, of course, was to get a larger and heavier and a stronger plate and a plate that satisfied our conditions better. He was the Chief Engineer of the system and I was brought in more because I had paid particular attention to the service of the tie plates out on the road, not that I am an engineer and able to suggest what would be the strongest or best tie plate under other conditions.

X Q. 570. Did you ever say to anybody that you and Mr. Storey were engaged in designing a tie plate "that will not be an infringement of the Wolhaupter patents"?

Mr. Reed: Objected to as not cross-examination, and as an attempt to lay the foundation to impeach the witness as to statements, not a fair question because it does not call his attention to time and place of the alleged statements, or the person to whom they were made.

A. I really do not remember it, Mr. Brown.

X Q. 571. You have no recollection of making any such statement?

A. Not in the least.

X Q. 572. Or any statement from which that could be inferred?

Mr. Reed: That is objected to.

A. I positively have no recollection of the conversation.

X Q. 573. You never wrote that to anybody, did you?

A. Not to my knowledge.

X Q. 574. I wish you would look at this letter that I hand you, look only at the turned over sheet and say whether that is your signature or not?

A. Yes, that is my signature.

Mr. Brown: I ask the Notary to mark on the sheet at a point adjacent to his signature the following words: "Marked for
447 identification, Cross Exhibit No. 2," together with the initials of the Notary.

The paper was so marked.

Mr. Reed: Also objected to as incompetent, irrelevant and immaterial.

Mr. Brown:

X Q. 575. Did you ever have any conversation with any person connected with the Independent Supply Company, or who had been connected with the Independent Supply Company with respect to the drawings and tie plates that you and Mr. Storey were making,—drawings for and which resulted in the designs shown in these blue prints, Exhibits P and Q and numbers 19 and 20?

A. The only man I remember to have been connected with the Independent Railway Supply Company was Mr. Wolhaupter, and I do not remember of a conversation with Mr. Wolhaupter. I do not

remember seeing Mr. Wolhaupter at the time this matter was up, nor having any conversation with him.

X Q. 576. Did you have any conversation with any person connected with the complainant, the Railroad Supply Company, on that same subject?

Mr. Reed: Same objection.

A. I have had conversations with Mr. Bell at different times about tie plates, but whether that particular point was referred to in the conversations I do not remember. As I said in my direct, I have frequently discussed tie plates with Mr. Bell, from the first.

X Q. 577. Did you ever say to Mr. Bell or to any other person subsequent to the beginning of your work with Mr. Storey on these designs, that it was Mr. Hodges' object to have plates made of such design and shape that he could buy them by the pound?

A. I may have done so.

X Q. 578. Have you any recollection as to having made any such statement to any particular person?

A. I don't remember making it to Mr. Bell, but I think that was our hope at the time. And if I am not very much mistaken we did buy them ultimately from the Railroad Supply Company in that way, that is, by the ton.

X Q. 579. And you bought a great many thousand tons from the Railroad Supply Company since then haven't you?

A. I know we bought a large quantity, yes, and I think in that way.

X Q. 580. Do you happen to know how many tie plates
448 have been purchased from the Railroad Supply Company since this suit was commenced?

A. I do not. Not a large quantity.

X Q. 581. Do you have any recollection of stating to Mr. E. H. Bell that the designing of the plates which are shown on the blue prints Complainant's Exhibits 19 and 20, and Defendants' Exhibits P and Q was by you and Mr. Storey in an effort to produce a tie plate that would not infringe the Wolhaupter patents, or that would get around the Wolhaupter patents?

Mr. Reed: That is objected to.

A. I absolutely have no recollection of talking with Mr. Bell at all about these designs.

X Q. 582. At any time or at any place?

A. At any time or at any place.

X Q. 583. And you also have no recollection of having written a statement similar to the question I just asked you to any person?

A. No, I have no recollection. It is evident I must have written a letter because you have shown me one with my signature, but what is in that letter I don't, at this moment, recall.

X Q. 584. From your knowledge and experience in the investigation of tie plates as testified to in this case, do you consider that either one of the designs of tie plate shown on these four blue prints we have last been referring to and which were the result of your

efforts and those of Mr. Storey, exhibit anything new that was not in the art prior to the time when you and Mr. Storey entered upon this work and if so what?

Mr. Reed: That is objected to as not cross-examination.

A. I am not sufficiently acquainted with the art in the way you speak of to form an opinion in that particular.

X Q. 585. I am speaking of the practical art as you have testified you observed it in your inspection and in your contact with these devices in the course of your regular occupation.

Mr. Reed: Same objection.

A. Well, in what particular? Please explain a little more. The ribs underneath are an advantage. Is it in that way you mean?

X Q. 586. I will perhaps put my question in a little bit different form. You have stated in your direct examination that you
449 have made examination of track conditions in 1904, for the purpose of examining tie plates.

A. Yes.

X Q. 587. You have spoken of a large number of tie plates that you have seen in use at different times.

A. Yes.

X Q. 588. And in your position as the head of the tie and timber department of the Santa Fe system you have no doubt seen a great many tie plates on the market and in use.

A. Yes.

X Q. 589. Now I am not asking you anything about any technical matters outside of what you have yourself seen. What is there new in the designs which you and Mr. Storey got up and as shown in these four blue prints, and of which you had no knowledge prior to the time you thus entered upon the work of making those designs?

Mr. Reed: That is objected to as not cross-examination, and as immaterial and irrelevant.

A. I do not recognize anything new in the general character of the design.

X Q. 590. Do you know any reason why the tie plate like blue print Exhibit I, recommended by you in your report, was not adopted?

A. Yes, they were afraid the ribs underneath would damage the tie, and they had had such a scorching from that trouble that Mr. Dun, then Chief Engineer, was afraid to introduce it.

X Q. 591. About how long has the Santa Fe system been using tie plates with ribs underneath similar to those shown in your blue print I?

A. Of course there were those in New Mexico referred to in the 1904 report, and the only other lot that I knew with the ribs underneath, were those that I have spoken of that were made in 1906.

X Q. 592. You mean the Sacramento plates?

A. That the Sellers people made, yes.

X Q. 593. Do not the present plates of the Santa Fe have ribs underneath, the present standard?

A. Yes, I am speaking of prior to the present plate.

X Q. 594. When were the present standard plates adopted?

A. Last fall.

X Q. 595. And they all have ribs underneath?

A. They all have ribs underneath, yes.

X Q. 596. And they have been put in track?

450 A. Yes.

X Q. 597. And under heavy traffic?

A. Yes.

X Q. 598. And on grades and curves?

A. Yes.

X Q. 599. And do they damage the tie as was anticipated, as you say in your report?

A. No, I don't think they do.

X Q. 600. So that there was no real foundation for refusing to adopt your recommended plate of 1904 by reason of the ribs underneath damaging the tie, was there?

A. It was a fear that they might, that was all.

X Q. 601. It was simply a fear?

A. Yes.

X Q. 602. Subsequent experience has dispelled that fear?

A. Yes, as far as our tests have gone.

X Q. 603. Have you any personal interest in this suit yourself?

A. No, nothing at all.

X Q. 604. The Santa Fe system is not a party to the suits, as far as you know?

A. Not so far as I personally know.

X Q. 605. Do you know any reason why the Santa Fe system is interested in the suit or either of these suits?

A. I do not of my own knowledge. That is, I have seen no documents or anything that would show that they are interested in it.

X Q. 606. What is your best information on the subject?

A. Well, my best information is, I have been told they are.

X Q. 607. You have said something in your direct examination about the relative advantages of the ribs on the lower side of the plate when they run across the grain and when they run with the grain; I wish you would state that again, please.

A. I believe when the ribs run across the grain parallel with the rail that they hold the track in gauge better than when they run the other way.

X Q. 608. And is there any difference in the life of the tie with plates having these two kinds of ribs?

A. Those plates that we had with the flanges running parallel to the tie I don't call ribs, those are always known as flanges, at least we knew them by that. They are so deep and sharp as compared with ribs that were in the New Mexico plates, and you know what I mean by the New Mexico plates, the Glendon rib, run across

451 the tie, that is, they are placed so as to be across the tie.

X Q. 609. Well, if the ribs were of equal depth projecting

below the bottom of the plate an equal depth, and one plate had the ribs running across the tie and the other plate had the ribs running with the tie, what would be the relative effect on the tie in your opinion?

A. If the ribs were the same depth as the ribs I advocated I don't think it would be anything like so much better if they ran parallel with the tie as it would if they ran across the tie.

X Q. 610. Why?

A. Because they would practically only have their cross section of the parallel ones to withstand the lateral thrust, while the others would have their entire length against the wood.

X Q. 611. According to that then you would have to have the ribs that ran with the grain of the tie somewhat longer would you not, in order to get more friction?

A. Even then you would not get the advantage. The deeper you have the flanges the sharper they must be so as to penetrate the timber and of course the sharper the flanges the less the cross section of them.

X Q. 612. And it is the cross section of the ribs that run lengthwise of the tie that you say is the effective part in holding the plate against the lateral thrust?

A. With the friction, whatever friction there is in the wood against the side surfaces.

X Q. 613. And when you examined the Glendon plates in 1904 where the ribs were across the tie parallel to the rail, you observed no damage to the tie, did you?

A. Not on those that I took out.

X Q. 614. And with the plates in position under the rail it would be impossible to examine the tie for that purpose, would it not?

A. They could be examined to a certain extent. They could be examined as to the position of the plate and the condition of the tie around the plate and how far it had gone down, and the soundness of the wood around the outside of the plates.

X Q. 615. As to whether those ribs effected a compressing action rather than a cutting action on the wood you couldn't observe that without taking the tie out of track, could you?

A. Without taking the rail and the plate off.

X Q. 616. Yes, and you only took two of those ties up as I understand you?

452 A. That was all.

X Q. 617. So that when you testified in your direct examination as to the compressing effect of these cross ribs, you must have referred only to those two ties that you actually examined for that purpose?

A. I referred to more. I explained that my investigation was not only as to what I saw myself, but the experiences that I got from men who were in charge of the track, and that morning the section foreman who had that piece of track in charge was with me, at this time, and the previous night, and also after I got back to Las Vegas I got the Roadmaster's experience, in addition.

X Q. 618. So that you testified to this fact as the result of these

other people's experience and not of your own observation, except as to those two ties, is that it?

A. Except as to what I saw myself on those two ties, so far as the compression of the rib below the plate where it couldn't be seen, I only referred to what I saw and the result of my inquiry from the other men.

X Q. 619. Do I understand you to say in substance, that the plate which I now show you, marked Defendants' Exhibit R, is more nearly like the plate marked Defendants' Exhibit C, than any other plate that you had seen in use up to the time this plate R was adopted?

A. It is.

X Q. 620. Point out please, again, and with all the detail that you care to use, the points of similarity between those two plates?

A. First, there is a shoulder to each. In Exhibit C there is one depression crossing the plate under the rail base, and in Exhibit R there are two. Underneath the ribs of each are the same and the construction of the bottom in other respects is the same. Of course the one is larger than the other, thicker, heavier. The one has three spike holes in, the other has four. We are having four in now, ourselves. This depression in Exhibit C is concave while the depressions in R are more pronounced and with sharper edges. I will be glad if you will point out anything that I have left out.

X Q. 621. No, I am asking you to point out all the similarities that you can find between those two plates.

A. The slope outside the inner spike holes of R, I mean the spike holes away from the shoulder to the edge of the plate is sharper than in Exhibit C; and the slope back of the shoulder in R is longer and heavier. I don't know of anything more.

453 X Q. 622. You examined some track in 1904 having flat tie plates, and you compared the wood of the ties under these flat tie plates with the condition of the ties under flanged tie plates.

A. I did.

X Q. 623. How minute an examination did you make at that time to ascertain the relative condition of the two ties, one having flat tie plates upon it and one having flanged tie plates?

A. Some of the ties I saw, under one rail it had a flat tie plate, under the other rail on the same tie it had a flanged tie plate so that you had the result of the two different plates on the same tie.

X Q. 624. And how minute an examination did you make to ascertain the relative condition at the opposite ends of these same ties?

A. Well, they were out of the track and lying along side the track and we made an examination, that is, the Roadmaster and myself, in fact he pointed them out and we got off the motor and looked at the ties. We were on a hand car.

X Q. 625. Did you cut any of those ties through to see the condition of the inside of them?

A. No, I did not.

X Q. 626. Underneath, the place where the plate had been?

A. No, it wasn't necessary.

X Q. 627. You could tell from a mere examination of the outer surface whether the tie was sound or whether the wood was gone, could you?

A. Why, the ties showed for themselves, yes. There was a very marked difference between the two.

X Q. 628. Did you ever see a wooden tie that looked nice and smooth on its upper surface after a tie plate had been removed and yet when sawed through was practically rotten and of no use at all?

A. I might also say no, I don't remember, unless the rot was a small heart rot, right in the center, because if it was any extended rot and only a thin shell of good sound wood between the bottom of the tie plate where that rot occurred, the weight of the power and the trains going over it would crush that shell of wood in and it wouldn't be level and smooth.

X Q. 629. Not even in the case of a flat bottom plate?

A. No, not where there was only a shell of sound wood and the tie was utterly decayed in the center, it would go down, plate or no plate.

454 X Q. 630. I would suggest that is a good field for your further investigation, Mr. Faulkner.

A. I will ask you to accompany me when we go on the investigation.

X Q. 631. Mr. Faulkner, you have examined the Wolhaupter Letters Patent No. 538,809, and No. 691,322, and No. 721,644, have you not?

A. If you refer to the comparison with some models in patents and some models here, or rather, some cuts in patents and some models here, yes; but I haven't read the patents nor examined them.

X Q. 632. You have compared the drawings of these patents with the aluminum models O, O1, O2, O3 and O4, have you not?

A. If those bear the numbers that you speak of, yes.

X Q. 633. And I believe you testified that these models are correct representations of the drawings of those patents to which your attention was called?

A. As near as could be done with the cursory examination that was given, I believe they are, as near as possible, correct models.

X Q. 634. If it was desired to roll tie plates like these several aluminum models O to O4, inclusive, is it your opinion they may be successfully rolled?

A. I am not a rolling mill man, and I prefer not to——

X Q. 635. You don't know anything about the manufacture of the plate?

A. No, I don't know anything about the rolling of them

X Q. 636. How much larger are these models than the drawings with which you compared them yesterday?

A. Well now, I didn't measure, I only looked at the design.

X Q. 637. Please look at the drawings again and give me the dimensions of the drawings and also give me the dimensions of the models.

A. In figure 1, of 538,809, the model in the center shows 6¾

inches long while the drawing shows two and a quarter inches. The width shows 3⅜ in figure 2, and the model shows 5 inches.

I call your attention, that this is in perspective and of course it very materially alters the measurement in that respect. A man on a drawing may be only three inches high, and yet in the general perspective shows full height.

In 691,332, it shows 2½ inches in length of plate while
455 the model O1, shows 7¾. The width of the same plate is shown in the drawing of figure 1, 691,332, as an inch and three-quarters, while the model of the same print shows 5¾.

The next is 721,644; figure 2 shows approximately 2⅛ inches broad. The method of the same, Exhibit O2, shows approximately 5 inches in breadth. I prefer to change that last measurement, and measure these two together in the same connection and then measure these two. Figure 2 of 721,644 is 2⅛ inches in breadth and on the same basis the long flange in the middle is very close to ⅞ of an inch. Then the model of the same patent, Exhibit O2, shows in width approximately 5 inches, and the depth of the center flange an inch and three-quarters. The length in the same patent, figure 3, is approximately four and a quarter inches and on the model Exhibit O2, it is 7⅞. On the cut referred to, patent 721,644, figure 5, the width of the plate is 2⅛ inches, the depth of the middle flange is ⅞ of an inch, and the length in figure 6 is 4 inches, and on the model of the same patent, Exhibit O3, the width is 5 inches, the length 8 inches, and the depth of the center flange is approximately an inch and seven-eighths. In figure 8 of the same patent the depth of the center flange is approximately ⅞ of an inch and the depth of the center flange in Exhibit O4 for the same patent, is an inch and ⅞.

X Q. 638. Did you have anything to do with the making of these aluminum models?

A. I did not.

X Q. 639. Quite ashamed of them, aren't you?

A. No; no, I think it is a good idea.

X Q. 640. Please refer to Exhibit O, aluminum model, and state whether or not, in your judgment, based upon your experience with tie plates and track devices, a tie plate made identical with that model in size, shape and design, would be a practical tie plate and if not, why not?

A. By practical, I mean one that would fulfill the purpose for which a tie plate is made, and I do not believe it would.

X Q. 641. Go on, give your reasons for that opinion.

A. I don't think it could be impressed into the wood in a way that would give the best use to that tie plate without damaging the tie, and it would need extreme pressure even then.

X Q. 642. Do I understand you to mean that the act of pressing it into the wood would be what would damage the tie?

456 A. I think it would damage the plate as well as the tie, and probably the plate more than the tie at the start.

X Q. 643. Well now, suppose we had a suitable machine or a man

strong enough to act as a machine, so that that plate could be pressed into the tie properly, is that a practical plate, in your opinion?

A. Well, I can't answer on a supposition of that kind.

X Q. 644. But you did on direct examination.

A. I said I had never seen plates of that kind in the track, and that is true. But I was careful not to express any other opinion about the plate, and wasn't asked for any other opinion.

X Q. 645. Well, what is your best judgment as to that being a practical tie plate, assuming that we can put it in the tie and under the rail and without damaging the plate in so doing.

A. I would have to see the result of its service before I could say it was a practical plate, I could tell you better after that.

X Q. 646. Do you see anything in the shape or configuration of that plate that would lead you to believe that if it was properly placed in track it would not serve its intended purpose as a practical tie plate?

A. Have you reference to the under part or the over part?

X Q. 647. Both.

A. The upper part would be all right for a certain base rail in holding the inside and outside of the base in the tie plate. The angling cuts may be for some other purpose of which I am not advised, but so far as the space in there is concerned, that is practical. But this under part,—it might answer the purpose, you know. As Hamlet says, "there are more things in heaven and earth than is dreamed of in our philosophy," and a few years ago we didn't believe in air ships; they are here to-day. And it is possible that might work but I wouldn't like to advocate the buying of them for my company. I should expect to get fired if I did, and they accepted the recommendation.

Whereupon an adjournment was taken to November 24, 1909, at 10.15 o'clock A. M.

457 November 24, 1909—10.15 o'clock a. m.

Met pursuant to adjournment.

Present as before.

Cross-examination of E. O. Faulkner resumed by Mr. Brown:

X Q. 647*a*. Have you stated all the objections that you know would attach to a plate made like this Exhibit O, that would, in your opinion, prevent its being used practically in the track?

A. I don't think these two spike holes, coming so close together is a good feature in the plate. That is, so far as the tie is concerned.

X Q. 647*b*. Why, what difference will that make?

A. Well, I think that it will tend to damage the tie, those two holes being so close together.

X Q. 647*c*. There are machines and apparatus that have been used for seating tie plates into the ties, are there not?

A. I have so understood, yes.

X Q. 647*d*. And been used on the Santa Fe system?

A. Not that I have ever seen.

X Q. 647*e*. Now please look at the next aluminum Exhibit O[1]; do you know any reason why a tie plate made precisely like that aluminum model could not be rolled?

A. I don't know anything about the rolling at all. I am not acquainted with the methods of rolling.

X Q. 647*f*. Assume that we have a tie plate precisely like this aluminum model, Exhibit O[1] in size and shape, state whether or not, in your opinion such a plate would be a practical tie plate, and if not, why not?

A. So far as the top is concerned, yes. So far as the bottom is concerned it would be possible to use it as a tie plate.

X Q. 647*g*. What if any objections would there be to such a plate?

A. I think these flanges are entirely too deep and too many for the purpose. And further that those wedges, those,—well, call them wedges, underneath, with the flanges, would be detrimental to the tie.

X Q. 647*h*. By "wedges" you mean the prongs that are pushed out from the body of the tie plate between the flanges and project downwardly between the flanges?

A. That is it. I also think it would be extremely hard
458 to get that plate in the tie. In fact, I doubt whether it would be possible.

X Q. 647*i*. So far as the top surface of that plate is concerned, it would be practical, as I understand you?

A. Yes.

X Q. 647*j*. And your objections go to the bottom surface?

A. Yes.

X Q. 648. And the projecting parts therefrom?

A. Well, I will modify that about the flanges underneath, about it being extremely difficult to insert, I would like to correct that. I was under the impression, first of all, that the flanges went the other way, across the tie instead of lengthwise with the tie.

X Q. 649. How do you understand this plate is placed on the tie?

A. I understand that this is placed lengthwise to the tie, that is, the flanges are lengthwise to the tie.

X Q. 650. And with that understanding you modify your previous answer as to the difficulty of inserting those flanges in the tie?

A. It would be possible, with a machine, but very difficult with the power, because it would either have to be driven down as I say, with a machine, or with a spike maul, because it would keep the rails too high from the tie when the train is going over it, to let the power embed it.

X Q. 651. And would it make any difference whether a plate of this description was placed on a soft wood tie instead of a hard wood tie?

A. It would go easier into the soft wood than it would into hard wood.

X Q. 652. And the Santa Fe system uses a great many pine ties treated, does it not?

A. Yes, and we use a number of oak ties and other hard woods some of which are treated and some not.

X Q. 653. Now you have stated all the objections that you can

think of to a tie plate made precisely like this aluminum model, have you?

A. Well, I think I have stated sufficient, and enough, and I don't see any more at the moment.

X Q. 654. Now please look at the aluminum model Exhibit O^2; I suppose you don't know whether this model could be rolled in steel, do you?

A. I do not.

X Q. 655. So that if a rolled steel plate is made precisely
459 in size and shape as this model is, state what is your judgment as to its being a practical tie plate, and if not, then why not.

A. Well, the depth of the center flange would be such that it would need a machine to embed it in the tie before it could be used.

X Q. 656. And if you had such a machine for that purpose the plate would be practical, is that what you mean?

A. It could be used, yes.

X Q. 657. Would it make any difference with the practicability of this plate if the center flange was not so deep as is shown in this model?

A. Well, it would to that extent simply lessen the distance it would go into the wood. It would still have to be inserted with a machine unless it is about the same length or a little longer than the side flanges.

X Q. 658. As far as the top of the plate is concerned you find no difficulty with its being a practical plate?

A. No.

X Q. 659. Please look at the next aluminum Exhibit O^3, and assume that we have a steel plate rolled precisely as to shape and size to correspond with this model, state whether or not, in your opinion, that would be a practical tie plate, and if not, why not?

A. I see nothing to hinder it, so far as the top is concerned. So far as the under part it has just the same identical objections as made in reference to O^2. Practically the only difference between those two plates is on the top.

X Q. 660. Please look at the aluminum model Exhibit O^4, and I will ask you the same question as to that, that I did as to Exhibit O^3?

A. I don't see anything, so far as the top is concerned, to prevent its being used as a tie plate. The under part has the same objections as Exhibit O^2, it being identical on the under surface with O^2 and O^3.

X Q. 661. Exhibits O^2, O^3 and O^4, as I understand you, are identical so far as their under surfaces are concerned, and vary only as to their upper surface, is that correct?

A. That is so.

X Q. 662. The corrugations or grooves in the upper surface of the aluminum models O^2, O^3 and O^4, are the points of variance, I take it, one from the other?

A. Yes, and the fact that O^3 has a shoulder.

X Q. 663. Would you regard the grooves or recesses in the upper surface of those three places, O^2, O^3 and O^4, as equivalents of each other for practical purposes?

460

A. Well now the service in the track would have to prove that.

X Q. 664. You couldn't tell anything about that theoretically?

A. Only an opinion, and I have stated so far as the tops are concerned in each case it would be possible to use them on the track.

X Q. 665. Please look at Complainant's Exhibit 21, Complainant's Yellow-covered Catalogue, which I now show you, and look on the page containing the words "Flat bottom corrugated shoulder tie plate," and state whether that illustration corresponds with the picture or illustration of tie plate that you saw in Mr. Bell's office and which you mentioned in your testimony as being the Southern Pacific plate?

A. This looks identical, in my remembrance, with the plate he showed me, and I think this is the same. It may not be the same catalogue, but it was one of this color and general character as Complainant's Exhibit 21.

X Q. 666. Now please state just what you see in that picture that is, describe the plate itself, both as to top and bottom.

A. I see a flat bottom plate with a shoulder, four spike holes, two depressions running across the plate, that would be parallel with the shoulder, three bearing surfaces for the rail, the sides of the grooves being apparently at right angles to the bottom of the grooves; the two spike holes on the inside of the plate being in the slope towards the inner edge of the plate, that is, the edge farthest from the shoulder. That is about all I can call attention to.

X Q. 667. Now please look at this Defendants' Exhibit R, and compare that with the illustration of the catalogue both as to the top and the bottom of the plate.

A. The bottom of Exhibit R has two ribs running parallel with the shoulder, in other respects it is flat. It has only three spike holes, one in the shoulder and two on the inside. The two spike holes on the inside are in different position to the center than in Exhibit 21. The spike holes on the inside in Exhibit 21 are on the slope towards the edge, while the spike holes on the inside in R, are on the flat surface of the plate, the slope dropping down immediately behind them. The edges of the grooves are not so square as those in Exhibit 21. The casting has "E A O8 Santa" cast or rolled on the upper surface, and the other has not. That is about all the difference I can see between them. Both have shoulders. R also has a shoulder.

461

X Q. 668. Now please make the same comparison between the photograph Exhibit D, attached to the bill of complaint, and the illustration in Catalogue Exhibit 21.

Mr. Reed: This is all objected to as not cross-examination.

A. I can't see, from the examination, any difference between Exhibit R and the photograph at the top of Exhibit D, excepting that I don't see the letters rolled on the top. It is no use going over them, excepting to note just what way, unless you desire it.

X Q. 669. Then, as I understand you, the top surface of the plate shown in Exhibit D to the bill of complaint, and the top surface of the plate Exhibit R, are each substantially like the top surface of the plate shown in illustration Complainant's Exhibit 21?

A. Substantially.

X Q. 670. Can you recall the date when you saw this illustration, Exhibit 21, in Mr. Bell's office?

A. I can not.

X Q. 671. Can't you approximate by years, even?

A. No, because I was coming in and out to Chicago very frequently, and I have nothing now that would recall the particular time when this subject was up. As I said before, from the time this plate was made, or rather before the report was made, both Mr. Hawley and Mr. Bell knew the discussion that was going on, on the Santa Fe, and I talked with both of them about it, and from that time on for two or three years I occasionally saw Mr. Bell, and our conversation was generally on the subject of this kind, and I have nothing which would recall the time of the conversation excepting that of course, it was before August, 1907.

X Q. 672. That was the date when you started away on your trip around the world?

A. Yes.

X Q. 673. And it was after the date of making your report of 1904, wasn't it, somewhere between those dates?

A. Yes, because I have said that at the time this report was made the Southern Pacific was using two or three different types of flanged plates.

X Q. 674. And this one illustrated in Exhibit 21 was one of them?

A. I wouldn't call that a flanged plate.

X Q. 675. No, that isn't a flanged plate.

462 A. Then it would seem to me the question is rather peculiar.

X Q. 676. What do you locate in your mind as to the time when the Southern Pacific used the tie plate illustrated in Complainant's Exhibit 21?

A. I do not see any in their track probably for some time after they began using them. The reference to the conversation was not seeing a plate, it was seeing a blue print or white print.

X Q. 677. And that was about when, as you remember it?

A. That was between April, 1904, and August, 1907.

X Q. 678. I think you have already stated that you have no personal interest in this suit?

A. I have none.

X Q. 679. Are you related directly or indirectly in a business way or otherwise, with the Elyria Iron & Steel Company, with the Hart Steel Company or Guilford S. Woods, who are defendants in these two cases?

A. I am not related either personally or associated in business with them.

X Q. 680. And when you said yesterday that you understood from what had been told you that the Santa Fe system was interested in

this litigation or these two suits rather, did you mean that the Santa Fe system or railroad was interested financially?

A. I know that either through Mr. Woods' agency or from the companies we bought a lot of tie plates from one or the other of them. Now whether those tie plates were paid for I don't know, and how the Santa Fe is interested in this suit I could not positively say of my own knowledge, because I haven't seen any of the papers from the start.

X Q. 681. Well, you have been given to understand have you not, that the Santa Fe is interested financially in the result of these suits?

A. Yes, I have been given to understand they are interested in these suits?

X Q. 682. And are paying all or part of the expenses thereof, of the defense thereof?

A. I absolutely haven't the slightest knowledge of that part, of my own knowledge.

X Q. 683. What is your understanding on that point?

A. Well, I have no idea whether such is being done or not.

463 I know I never heard of either Mr. Reed or Mr. Cooke being Santa Fe attorneys.

X Q. 684. You have heard, however, that Mr. Reed is the personal counsel and adviser of Mr. Hodges, have you not?

A. I have heard that they are personal friends.

X Q. 685. But you don't know that Mr. Reed is the personal counsel of Mr. Hodges?

A. I don't know anything about that. Neither Mr. Hodges nor Mr. Reed has ever told me.

X Q. 686. You stated a moment ago that the Santa Fe system had purchased some tie plates from one or the other or all of these defendants; those were plates like Exhibit R, were they?

A. Yes.

X Q. 687. Do you know whether they purchased more than one lot from these defendants?

A. I couldn't tell you. I know we got some, but I never saw the orders, I wouldn't have any business with the orders, and all I know is that they furnished some plates because I had some of the lot sent to me, to my office, and from there to the railroad company's chemist for testing, to see whether the proper proportions of carbon, &c., was in the metal.

X Q. 688. Your company has purchased other plates like Exhibit R, have they not, from other concerns?

A. I believe so. I only know just in the same general way that I know of the first lot, and I had some of those sent to the office for the same purpose.

X Q. 689. Now these other plates that were not purchased from the defendants, were they purchased from the Railroad Supply Company, the complainant?

A. My general understanding was that they were, that the Railroad Supply Company furnished us with a large number. I don't know the two companies one from the other, who are the defendants in the suit, but we got some from one or other of them.

X Q. 690. Do you know of any tie plates like Exhibit R that were purchased or used by the Santa Fe, having been received from any other concerns than the complainant and the defendants?

A. I would not be in a position to know where the different lots of tie plates came from. I only know that they were sent out on the road on requisition, and who would furnish them I would have no means of knowing, and did not know, other than as I have stated.

464 Mr. Brown: I think that is all, Mr. Reed.

Statement by the Witness.

I desire to make a correction to my testimony in which I said the piece of tie, Exhibit A, was the 1888 tie. On looking at the memorandum in an old envelope on the side of the tie Exhibit A, which I had not looked at before, I saw that this was a piece of the tie that was treated in 1900 and not 1888, and on referring to my report I note that I say I had brought that piece in to show the action of the plate on a tie that had only been in the track four years, the plate being put on it at the time, or about the time, as compared with the 1900 ties on the Raton mountain. I desire to make that correction in my testimony.

Mr. Brown: Complainant's counsel desires the questions and answers on cross examination to remain as they have been taken down stenographically, and this statement of correction to go in separately.

Mr. Reed: Oh, certainly, that goes in just exactly as it is.

Redirect examination by Mr. Reed:

R. D. Q. 691. You have just made a correction in your testimony of yesterday; when did you discover this error in your testimony?

A. When the evidence adjourned yesterday evening.

R. D. Q. 692. Did you make the discovery yourself, or was it suggested to you by anybody else?

A. I made the discovery myself, and asked one of the attorneys when it would be proper to make the correction. I called his attention to the mistake.

R. D. Q. 693. Then it was not suggested to you by anybody else?

A. Not in the least.

R. D. Q. 694. In the report dated Topeka, Kansas, April 20, 1904, addressed to J. W. Kendrick, Third Vice President, and signed by E. O. Faulkner, which was offered in evidence by counsel for the complainant, I notice that you use the language: "While advocating a flat plate"; what do you mean by that expression, what part of the plate?

A. Flat below, on the bottom surface.

R. D. Q. 695. I wish you would state whether your recommendation and advocacy were for a plate totally flat on the bottom, or one with cross ribs?

A. Prior to this report and investigation I had made a
465 suggestion to Mr. Kendrick that we put in a plate with a perfectly flat bottom and a shoulder, and it was that recommendation which led to this investigation of tie plates of that type approximately.

R. D. Q. 696. And when was it that you changed your judgment and became convinced that a tie plate with ribs on the bottom transverse to the direction of the tie, was preferable?

A. It was after what I saw on the Pennsylvania, east, and what I saw on our own track on the Santa Fe track west of Las Vegas, coupled with the experience of such a plate related to me by the Pennsylvania, east, track officials and our own.

R. D. Q. 697. In speaking of what you saw on the Santa Fe system west of Las Vegas, do you refer to plates which were similar to Exhibits B and C?

A. I do.

R. D. Q. 698. Does this report, which has just been referred to embody a truthful and accurate report of what you saw and what was stated to you, as set out therein?

A. It does.

R. D. Q. 699. What particular part or portion of tie plate was especially in mind, if any, in this investigation and report and your recommendations?

A. Well, as I say, I had started out after recommending a perfectly flat plate on the bottom, and I came back with a different idea and recommendation.

R. D. Q. 700. What I wish to know is whether, when you were in the east on this tour and investigation, and in your inquiries, you were especially concerned with the top of the plate or bottom of the plate, or both?

A. Well, at that time it was more with the bottom than the top. There wasn't any particular question about the top excepting that we wanted a shoulder.

R. D. Q. 701. In your testimony you have frequently used the words "ribs" and "flanges"; I wish you would tell us exactly what you mean by each one of these phrases.

A. By "ribs" I have meant the ribs at the bottom of Exhibits B and C, and also Exhibit R.

R. D. Q. 702. That is, you mean small projections elongated on the bottom of the tie plate which run transversely to the tie and parallel to the rail?

A. Yes.

R. D. Q. 703. And by flanges what have you meant?

A. I have meant those in Exhibit O[1].

R. D. Q. 704. Well, describe them.

466 A. Which are sharp flanges that penetrate the wood and lie parallel with the tie and across the rail on the under part. Of course, when I say Exhibit O[1], I don't mean it to be inferred that the flanges on the Wolhaupter plate were as deep as these, I simply illustrate the flange itself.

R. D. Q. 705. You have been examined quite at length as to the

practicability of tie plates made in accordance with aluminum models O to O^4, both inclusive. What, in your judgment would be the effect on the tie of tie plates with flanges of the character shown by these models?

A. Well, I have already given evidence that in my opinion they would be detrimental to the tie.

R. D. Q. 706. And how would they operate to the detriment of the tie?

A. By destroying the strength of the wood in the tie, based on our experience with a similar type of tie plate.

R. D. Q. 707. In your judgment would tie plates of this character, that is, with the lower projecting flanges parallel to the grain of the tie, such as shown in the aluminum models referred to, pound and split the wood in the tie?

Mr. Brown: Objected to as leading.

A. I believe there would be difficulty in placing them without a machine, which would necessitate one on every section where such a plate was used. I see no reason, after they are in place, why the experience should not be the same with these as with flanges similar to Exhibit O^1, that we have had with our other flanged plates.

R. D. Q. 708. And what were those other flanged plates?

A. The Wolhaupter and the Glendon.

R. D. Q. 709. Glendon flange?

A. And the Glendon flange; and not only that but generally, tie plates of those types.

R. D. Q. 710. By your use of the term "Glendon rib plate" in your evidence, did you refer to the plates like Exhibits B and C?

A. I did.

R. D. Q. 711. You spoke in your testimony yesterday, during the cross examination, of having received a scorching from tie plates that had been used; do you recall what tie plates those were?

A. That had reference to a flanged plate.

R. D. Q. 712. Of what types?

A. Well, the Wolhaupter, the Glendon flange and such other flanged plates that we had used.

467 R. D. Q. 713. Had these Wolhaupter and Glendon flanged tie plates any shoulder on the upper surface?

A. Not those that we had in the track at that time.

R. D. Q. 714. I believe you testified that they were both with corrugated tops?

A. Yes.

R. D. Q. 715. In what way did those corrugations run with reference to the tie?

A. Lengthwise to the tie.

R. D. Q. 716. And I believe you also stated that the flanges on the bottom ran lengthwise to the tie also?

A. They did. The Servis tie plate is not one of those that has corrugations on top.

R. D. Q. 717. Please describe it.

A. It is flat on top.

R. D. Q. 718. And below what is it?

A. I have seen plates that were said to be the Servis with two flanges, and a later type with three flanges running also parallel to the tie.

R. D. Q. 719. And were these flanges all of the same depth or height, or different?

A. As I remember it they were all the same depth.

R. D. Q. 720. In all of the aluminum models which were submitted to you for examination, in what direction do the lower projections or flanges run, with reference to the tie?

A. Parallel to the tie.

R. D. Q. 721. And in what direction do the top surface projections or corrugations run?

A. On Exhibits O and O^1 they run parallel to the tie, and on Exhibits O^2, O^3 and O^4, across the tie.

R. D. Q. 722. I wish you would look at the drawings attached to specifications of Letters Patent to I. Wells, Railway chair, No. 203,570, patented May 14, 1878, and examine them carefully.

A. I have done so.

R. D. Q. 723. I wish you would state whether, in your judgment, if the device therein shown in figure 2, were cut up into sections seven or eight inches in length, the different pieces would each be capable of use as a railway tie plate?

Mr. Brown: Complainant's counsel objects to the question first, because it is not proper re-direct examination; secondly, as incompetent, irrelevant and immaterial, and thirdly, because the witness had not qualified on this record either as a patent expert or as having any expert knowledge of tie plates, or as having any knowledge whatever; in fact, he has disclaimed having knowledge of the method of rolling and producing tie plates.

468

Mr. Reed: Counsel for defendants states that so far as the objection that it is not proper re-direct is concerned, the question was omitted inadvertently on the direct, and counsel for complainant can have the privilege of full cross examination on the subject, if he desires.

A. I believe they would.

R. D. Q. 724. Examining the same drawings, I wish you would state whether in your judgment, the device therein shown is capable of practical use as a railway chair for and at the rail joint?

Mr. Brown: Same objection.

A. I believe it is.

Mr. Reed: That is all.

Recross-examination by Mr. Brown:

R. X Q. 725. On redirect examination you have referred to the Wolhaupter flanged plates and the Glendon flanged plates and "such other flanged plates as we had used"; what did you mean by that last expression, "such other flanged plates?"

A. I believe we had some Servis plates in the track that I saw, but I do not think there were many. The greater part of our plates, as I

remember, were what was known as the Wolhaupter flanged plate or the Wolhaupter plate.

R. X Q. 726. And those three plates, the Wolhaupter flange, the Glendon flange and the Servis flange, were all the flanged plates that you had in mind in your re-direct examination in speaking of flanged plates?

A. Yes; I don't remember that we had any more in. I saw some of those on the Southern Pacific, in fact the Roadmaster at the time told me he thought they had some in of every flanged type there was in the market. There were two or three other types, all of them resembled one another more or less, but I don't think they were to a large extent on the Santa Fe.

R. X Q. 727. You only saw, in fact, the three types that you have mentioned?

A. That I remember, yes.

R. X Q. 728. Did you ever see any Wolhaupter plates in service or intended for service that had a flange on them as deep as
469 the flange on Defendants' aluminum model Exhibit O[1]?

A. I have not, and I said so before.

R. X Q. 729. Did you ever see any plate intended for service or in use that was called the Wolhaupter, or sold by anybody pretending to represent the Wolhaupter plate that had a flange on its under surface as deep as the flange on the aluminum model Exhibit O[1]?

A. No, I never saw what was called a Wolhaupter plate with as deep a flange as that.

R. X Q. 730. You mentioned in your re-direct examination Pennsylvania track officials with whom you talked; give the names of those officials.

A. Oh, I could not now. What I had reference to in naming those was the men in charge of maintenance; the Assistant Roadmaster went down the road with me. I have forgotten his name long ago. The only others that I met at that time were the section foremen in charge of different sections that we passed over, and in the evening the Roadmaster, whose name I have already quoted.

R. X Q. 731. And you don't remember their names?

A. No, not the others I do not, that is to say, that I talked to in reference to those plates.

R. X Q. 732. Now have you ever seen one of the Wells railroad chairs, such as illustrated in those patent drawings last shown you?

A. I have not.

R. X Q. 733. You never saw one?

A. No.

R. X Q. 734. Do you know of any other person who ever saw one?

A. I don't.

R. X Q. 735. From your practical experience in the manufacture of railroad tie plates, please tell us how heavy this railroad chair would be, if made like this patent drawing, of a size and a length sufficient to cover four ties, as shown in the patent drawing?

A. Well, I give it up.

R. X Q. 736. I thought so. Tell us how thick the chair would be when made to go over the four ties as shown in the patent drawing?

A. Have you got a rule?

R. X Q. 737. Yes, I have got one (handing witness rule).

A. I am simply giving an opinion based on looking at a
470 drawing which is not made to scale, but I should think the thickness would approximate three quarters of an inch.

R. X Q. 738. How do you know the drawing of that Wells Patent is not made to scale?

A. Because I don't see anything to indicate that it is.

R. X Q. 739. As a matter of fact you know that very few patent drawings are made to scale do you not?

A. Well, I haven't had much experience in examining closely the drawings attached to patents.

R. X Q. 740. Please give us your best information and belief as to the dimensions of a railroad chair made in accordance with the illustration of this Wells patent, when the chair will be long enough to go over four railroad ties as illustrated in that drawing? Give us all the dimensions, please.

A. Well, ties are usually laid with centers 20 inches and as there are four ties shown here that plate would indicate that it was over 60 inches long.

R. X Q. 741. Well, what about its width and thickness and other dimensions?

A. Well, its thickness would be very much greater than any chairs I have ever seen. The only type of that kind that I know of is the 39 inch angle bar, that is the longest that I know of. That rests on three ties.

R. X Q. 742. How wide would this chair be as indicated by these drawings, to your mind?

A. Well, seeing that figure 1 has a rail on top of it in position, I infer that the width of figure 2 would be such as would take in that rail base.

R. X Q. 743. From this drawing of the Wells patent can you tell what size of rail is indicated there, as to weight, for example?

A. The weight of the rail in 1878 was very different from the weight of the rail today. It would be a very much smaller rail at that time, and I can only infer that the rail in the drawing was intended to apply to rails that were in use at the time the patent was taken out. But it could, of course, be widened to take in any rail base.

R. X Q. 744. What was the standard rail in 1878, as you remember it?

A. Well, 50 pound to the yard would be a big rail at that time.

R. X Q. 745. And what was the width of the base of such a rail? Can't you recall it without referring to——

471 A. Yes; about three and three quarters to four inches. I wanted to give it to you exact.

R. X Q. 746. I wanted your opinion, not exact information.

A. It would be four inches, say.

R. X Q. 747. Now can you tell from the drawing of the Wells patent how thick this chair would be from its top surface on which the base of the rail rests, to its bottom surface which rests on the face of the tie?

A. Well, I have said probably three quarters of an inch.

R. X Q. 748. And how deep would the depending rib, to which is attached the letter E, extend below the lower face of the chair?

A. If the sketch in figure 1 is supposed to represent the depth that it would go into the tie, it would be more than half the depth of the tie, and looking — it in that particular, the thickness on top would be also greater than the thickness that I said it would practically be, as much as the rib underneath.

R. X Q. 749. And how deep would that rib be assuming it to be greater than half the thickness of the tie, as you stated?

A. Well, the tie is six inches thick. I don't think there has been any difference in the thickness. In 1878 it may have been a little less. Our standard thickness today is 6 inches.

R. X Q. 750. Then the depth of this rib E, would be substantially three inches below the lower face of the chair, according to that?

A. If the drawing was intended to show the depth that the bar—I can't call it rib—would go into the tie.

R. X Q. 751. And the width of this rib, letter E, is shown in figures 1 and 2 as being greater than its depth, is it not?

A. Yes, but in figure 3 it shows a very, very slight difference.

R. X Q. 752. And in figure 3 is the lower edge of the rib illustrated as being in the tie at a lower level than the bottom point of the spikes?

A. The bottom of the spikes goes slightly below the bottom of the bar, but they appear to be screw spikes.

R. X Q. 753. The shape of this rib R is such, is it not, that the chair could not be placed into the ties without the ties being cut for that purpose?

A. Specially cut for that purpose.

R. X Q. 754. Specially cut. The chair could not be placed
472 under the track and the rib forced into the tie by the rolling weight that passes over the rail?

A. No.

R. X Q. 755. Nor could the rib be forced into the ties by any machine or apparatus with which you are acquainted?

A. No.

R. X Q. 756. What, in your opinion, would be the effect on the tie of cutting the tie substantially to half its thickness in order to produce this socket for the ribs to rest in?

A. Oh, the tie would break; it would be liable to break.

R. X Q. 757. It would really be an impractical thing, would it not?

A. To that depth. Although not over two or three months ago I saw an article in the Railroad Age Gazette, I think, in which a railroad engineer advocated just such an appliance as that, but of course not anything to the depth of half the tie. He advocated it probably to a depth of three quarters of an inch and said then that the tie would necessarily have to be shaped the exact size so as to let this bar fit into it.

R. X Q. 758. That is to say, the ties would have to be specially prepared for that purpose?

A. Exactly, yes. The engineer stated that it would in the best way prevent the lateral out-thrust of the rail. It was for a tie plate.

Mr. Brown: So much of the answer of the witness to the last two questions referring to what he saw in an article purporting to come from some engineer, is objected to as volunteered and not responsive to the question, and also as utterly immaterial to any issue joined in the case, and is hearsay and incompetent.

R. X Q. 759. I believe you said that such railway chairs as you have seen or are acquainted with were approximately how long?

A. The longest, I only referred to one, and that was the 39 inch angle bar; the others vary from the shortest, 22 inches.

R. X Q. 760. In the earlier days of your railroad experience, that is, prior to your coming to the Santa Fe system, rail chairs were somewhat in common use, were they not?

A. No, I don't think so. They were more what was called fish plates.

R. X Q. 761. Has the use of rail chairs, so far as you have observed it, increased in proportion to the increase in the growth of trackage since you entered the railroad business?

473 A. In weight?

R. X Q. 762. No, the numbers.

A. Well, the fish plates answered the same purpose that the angle bars and rail fastenings or chairs do today. Now the rails are being made 33 feet long, some longer even than that, and of course the longer the rail the fewer chairs in proportion, or angle bars, whichever kind is used.

R. X Q. 763. Well, in the early days were the chairs or fish plates or angle bars, whatever you choose to call them, used on each tie?

A. No, only at the joints.

R. X Q. 764. Where two rails abutted, end to end?

A. Yes.

R. X Q. 765. Are angle bars or chairs used today other than at the joints?

A. Yes, they are often cut in two and sometimes in three parts and used frequently between the points for the purpose of hindering the creeping of the rails.

R. X Q. 766. That is they were placed on intermediate ties?

A. They were placed on intermediate ties.

R. X Q. 767. Between rail ends?

A. Yes, the angle bar being cut, dependent on its original length, sometimes in two parts, sometimes in three parts and then put on intermediate ties.

R. X Q. 768. Are those devices what you would call a rail chair or a rail brace?

A. No, they are put on for the purpose of or as anti-rail creepers.

R. X Q. 769. As anti-rail creepers?

A. Yes. But some of them that I have seen answer the purpose of a tie plate at the same time because they come under the base of the rail and are spiked to the tie on the inside of the rail base.

R. X Q. 770. Now as an expert in tie plates I wish you would give

me, for the benefit of the Court, some definitions, and first I want your understanding and definition of a rail chair, per se.

A. A rail chair, as I understand it, is for the purpose of holding the one end of the rail to the adjoining rail.

R. X Q. 771. It is a device then placed upon two or more ties for the purpose of holding one end of one rail to the end of the adjoining rail; is that your definition?

A. Yes.

R. X Q. 772. What is your definition of a rail joint?

474 A. It answers exactly the same purpose.

R. X Q. 773. Then your definition of a rail joint and a rail chair is one and the same?

A. In this country, as I understand your question, yes. In England a rail chair is put on each tie, but they have a different type of rail from what we have.

R. X Q. 774. And what is your definition of a rail brace?

A. The rail brace is used on the outside of the rail to keep it in place.

R. X Q. 775. You mentioned a rail chair in England being a different device from that in this country; what do you understand to be the definition of a rail chair as used in England?

A. Well, a rail chair that is used on every tie under every rail to hold the rail in place on the tie, and they use joints as well at the joints, but they are an entirely different device to the rail chair.

R X Q. 776. What is the shape or configuration in cross section of the English rail that requires these rail chairs that you speak of?

A. The English rail is what is termed the double headed rail; the bottom head is slightly smaller than the top head.

R X Q. 777. Look at the copy of United States patent to Thompson and Race, No. 305,864, of September 30, 1884, which I now show you and looking at figures one and three, state whether or not that patent illustrates a rail chair such as you understand it?

A. It does; that is practically what I have reference to.

R. X Q. 778. That shows a type of English rail, does it, the double headed rail also?

A. Approximately, yes, in the same general shape. Of course the two heads there are shown the same size, but other than that it shows what I mean as the double headed rail.

Mr. Brown: The patent is identified by the witness as illustrating an English rail chair is offered in evidence as Complainant's Exhibit, and marked as follows: "Complainant's Cross Exhibit number 2, rail chair patent."

R. X Q. 779. Did you ever see any rail chairs used in the English practice that extended away past other than on separate ties? In other words, chairs that extended over more than one tie?

A. No, I don't remember any.

R. X Q. 780. Do you understand that the words "railway

475 chair" or "rail chair" mean different things in this country and in England?

A. Yes, I do.

R. X Q. 781. Do you call this device shown in the Wells patent No. 203570, that has been shown to you, a railway chair?

A. No, I would call it a railway joint.

R. X Q. 782. Then the distinction in your mind between a railway chair and a railway joint is that the chair is placed one on each tie, and the joint is placed on two or more ties and holds the abutting ends of the rails together?

A. Yes.

R. X Q. 783. And this without particular regard to the shape or conformation of the device itself?

A. Yes. I notice this Wells patent has also the fish plate that I spoke of before. That is in figure 1 where the four bolt holes are.

R. X Q. 784. You are referring, I presume, to the unlettered portion of the drawing figure 1, showing a relatively thin, long plate extending from the upper surface of the flange of the rail to the under surface of the top of the rail and adjacent to the side face or web of the rail?

A. Yes, sir.

R. X Q. 785. These fish plates are also shown in figure 3 are they not?

A. Yes, cross section.

R. X Q. 786. The purpose of the fish plates is to bolt or join together the adjacent ends of two rails, is it not?

A. Yes, the fish plate is for that purpose, and it always rested between the top of the bottom and under part of the head just as this is shown here in this Wells patent.

Mr. Brown: That is all.

Redirect examination by Mr. Reed:

R. D. Q. 787. Does this Wells patent page of illustrations especially figure 2, show as a part of the device a top shoulder or shoulders.

A. Two shoulders, one each side of the rail base.

R. D. Q. 788. Does it show top corrugations parallel to the rail?

A. Yes, two.

R. D. Q. 789. How many rail bearing surfaces?

A. Three.

476 R. D. Q. 790. Does it show a projection, rib or bar from the under side for the purpose of engaging the tie?

A. It does.

R. D. Q. 791. What is the function of the shoulders as shown therein?

A. It is to hold the rail in position.

R. D. Q. 792. What would be the effect of those shoulders on lateral motion of the rail?

A. It would tend to prevent it.

R. D. Q. 793. What would be the function of the shoulder projection?

A. It would also tend to hold the chair in position on the ties.

R. D. Q. 794. And what effect would it have on the lateral motion of the chair?

A. It would, of course, tend to prevent that also.

R. D. Q. 795. Is it your judgment that the ordinary mechanic, accustomed to work on railway chairs and railway fish plates could construct an operative and practical device from the drawing shown?

Mr. Brown: The question is objected to as incompetent, irrelevant and immaterial; also because no foundation has been laid therefor, the witness not having qualified as an expert in tie plate construction or even as a mechanic himself, or as having any knowledge of what the ordinary mechanic might or might not do.

A. I believe he could.

Mr. Brown: Same objection to the answer.

Mr. Reed:

R. D. Q. 796. What is your judgment as to the ability of such ordinary mechanic to construct from the drawings shown, the device that is shown in those drawings?

Mr. Brown: Same exception.

A. I believe it could be done.

R. D. Q. 797. As shown in the cross section figure 3, does the lower projection extend more than half way, or even half way into the tie?

A. No, not quite half way.

R. D. Q. 798. As you understand these drawings, does the lower projection or rib go crosswise of the tie?

A. Crosswise to the tie.

R. D. Q. 799. You have stated that ties are spaced about 20 inches from center to center.

A. Yes.

477 R. D. Q. 800. Is there any modification of that where rails are joined together?

A. They are sometimes spaced closer together at the joints.

R. D. Q. 801. What is this difference at the joints?

A. Well, that would vary, dependent on the joint itself.

R. D. Q. 802. How closely are ties placed at joints in some constructions?

A. Probably two and three inches closer at the joints than intermediate to them.

Mr. Reed: That is all.

Recross-examination by Mr. Brown:

R. X Q. 803. You have stated that the average thickness of ties at the present time is about six inches.

A. That is the customary thickness with us, yes, sir.

R. X Q. 804. About what is the width of the tie?

A. The standard width with us is eight inches.

Mr. Brown: That is all.

E. O. FAULKNER.

Whereupon an adjournment was taken to 2:15 o'clock P. M. of the same day.

November 24, 1909—2:30 o'clock p. m.

Met pursuant to adjournment.
Present as before.

W. B. STOREY, JR., a witness of lawful age, having been first, and before the commencement of any examination, duly cautioned, examined and sworn as by statute provided, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, age and residence?
A. W. B. Storey, Jr., age 52; residence, Chicago.
Q. 2. What is your occupation?
A. Civil engineer.

Mr. Brown: Complainant's counsel here notes that the witness gives his residence as Chicago, and also calls attention of the
478 Court to the fact that the notice under which these depositions are taken calls for the taking of the depositions de bene esse, under the statute; he therefore protests against the taking of the depositions de bene esse in shorthand, and requests that they be taken in writing or on a typewriting machine, or else that they be taken stenographically under the 67th Rule in Equity as amended.

Mr. Reed: In what way would the taking under the 67th Rule vary the situation?

Mr. Brown: Complainant's counsel repeats his objection to the taking of the depositions of witnesses residing within one hundred miles of the place where the case is to be tried, being taken under the guise of de bene esse depositions, and their being taken down stenographically, when the statute distinctly provides that they should be taken down in writing or on a typewriting machine.

Mr. Reed: To which counsel for defendant replies that we will take the deposition of the witness, and decide under what it is to be taken hereafter, and asks the counsel for the complainant whether he has any other objections than the mere fact of taking them stenographically?

Mr. Brown: Counsel for complainant repeats his objection and states that the taking of the depositions in this form is not only inconvenient but delays the proceedings, and besides is contrary to the statute, and that the depositions are not being taken in accordance with the notice served upon him.

Mr. Reed:

Q. 3. What is your occupation?
A. Civil engineer.
Q. 4. With what railroad are you employed?
A. The Atchison, Topeka & Santa Fe Railway System.
Q. 5. How long have you been in the employ of the Santa Fe system?
A. Of the Santa Fe system proper, nine years; of portions of the

road which are now parts of the Santa Fe system, fourteen years, or since 1895.

Q. 6. Are you a graduate of any learned institution, if so what and when?

A. I am a graduate of the University of California of the year 1881, College of Engineering.

Q. 7. What has been your experience in railroad work?

A. Before entering college I was engaged on construction and location of railroads for between one and two years. After leaving college I have been engaged on railroad work of all kinds with the exception of an interim of two years, between 1893 and 1895.

479 Q. 8. With what roads and in what connections, if any, were you before your connection with the Santa Fe, or the roads which have become absorbed in that system?

A. I first began my work with the Central Pacific Railroad in California, and after college took up service with the same company and continued in its service and in that of its successor, the Southern Pacific Company, until 1893.

Q. 9. And what was your position with these roads?

A. I began in the lowest position possible, in an engineering outfit, driving stakes, measuring, and similar work, and gradually rose to more important positions until, at the time of leaving the Southern Pacific service I was in charge of important lines of construction which included the rebuilding of portions of their existing lines, as well as new lines in territory which had not previously been covered.

Q. 10. What time did you become Chief Engineer of the Atchison, Topeka & Santa Fe Railway system?

A. I became Chief Engineer of the Atchison, Topeka & Santa Fe Railway system in 1906, but prior to that I was Chief Engineer of the Atchison, Topeka & Santa Fe Company, beginning in 1900.

Q. 11. In the discharge of your duties in connection with the railroads, have you had occasion to make any observations or experiments as to ties and tie plates?

A. I have had opportunity to make observation and have done so during a great part of my professional work.

Q. 12. What was the first occasion that led you to consider the desirability or necessity of tie plates in railroad construction and maintenance?

A. My early service in railroading was in a part of the country where very soft ties were used, they being largely made from a wood known as red wood. This particular wood is very long lived considered from the point of view of rotting, ties having existed in the track where very little service was required of them, for forty years. I, early in my experience, noted that the rails were cutting these ties badly and began trying to form some idea as to how such cutting could be prevented, and this called my attention to the advisability of a device which has since come to be known as a tie plate.

Q. 13. When was it for the first time that you actually observed the tie plate in service, and what was the tie plate that you so observed?

A. I can not give the date, but it was somewhere between 1890

and 1893. I do not recall the exact point, but it was during my service with the Southern Pacific Company.

480 Q. 14. What was the form of the plate, and its name, if you know?

A. It was a plate that I have since learned was called the Sacramento plate, rolled by the Southern Pacific Company at their shops in Sacramento, as I was informed. I had also, at that time, called to my attention a plate known as the Servis plate, but I do not recall having seen that plate on the road although I had seen samples of it and had seen it largely advertised. Also a representative of the company handling the Servis plate had conversed with me, had shown me either samples or cuts, and had discussed the probable action of such a plate on the tie.

Q. 15. Please describe this Servis plate.

A. The Servis plate was a flat piece of steel on top, and of varying sizes, I believe I was shown plates not over three and a half inches wide, possibly four; other plates between four and a half and five inches, and still wider plates, but I do not recall the width. Nearly all of these were between six and eight inches in length. There were flanges, three in number, on the bottom, running longitudinally with the plate and designed to enter the wood in the direction of its fibre. Two of these flanges were on the extreme edge and one in the center. There were two spike holes designed to go on each side of the rail and in a manner known by us as staggered. The thickness was possibly 3/16 of an inch. I have no distinct recollection as to whether this was the exact thickness or not, simply giving my impressions as to size.

Q. 16. Please describe the Sacramento plate.

A. The Sacramento plate was nearly square, I should say six or seven inches in each direction, it was flat on the bottom and had a rib on the outside or side away from the center of the track, running parallel with the rail. It, I believe, had a slight inclination on the upper surface tending to tip the rail toward the center of the track. The thickness was not great, possibly a quarter of an inch on the edge, being thicker on the shoulder side and thinner on the opposite. I do not recall the number of spike holes.

Q. 17. When you say it had a rib parallel to the rail, you mean upon the top or bottom?

A. On the top; the bottom was flat, as described.

Q. 18. Look at the plate, Exhibit G, and state whether that represents the Sacramento form of plate?

A. To the best of my recollection, yes, except that it is possibly somewhat larger than the plate I have in mind, so far as dimensions are concerned.

481 Q. 19. Look at the blue print, Exhibit K, and state whether that shows the Sacramento plate?

A. That is, as nearly as I can remember, the plate that I saw.

Q. 20. Were you at any time concerned in the construction of the San Francisco & San Joaquin Valley Railroad?

A. I was; I was Chief Engineer and General Superintendent.

Q. 21. In what year was that?

A. Extending from the year 1895 to 1900.

Q. 22. With what system is that road at present?

A. It is now part of the Santa Fe system.

Q. 23. Did you adopt or use a tie plate upon that road?

A. I did.

Q. 24. What was the style of plate adopted and how extensively was it used?

A. We used the Servis plate and applied it to every tie on the main line of the road, the road having between three and four hundred miles of track; I have forgotten the exact mileage.

Q. 25. Was there at any time any change made from the Servis plate as you have described it, in the plate that was actually used upon this road?

A. There was a change made in two details; the number of flanges underneath was changed to four instead of three, the two outside flanges remaining the same. In addition, one more spike hole was placed in the top making three in all. The purpose of this additional flange was to allow the punching of three holes in place of two, and thereby dispensing with the necessity for rights and lefts, which would have been necessary, and were necessary in the case of the first plates shown me of this type. I considered the change somewhat objectionable, but the reasons given finally seemed to overbalance the objections and I adopted this particular type for the balance of the road.

Q. 26. Please describe the form and dimensions of the lower projections upon this Servis plate?

A. My recollection is that the two outside flanges were perpendicular to the surface of the rail on the outside, the inside of these same flanges being sloped, but the general shape being somewhat knife shaped. The inside flanges were sloped in both directions, but were also thin at the base and tapered to a point. The depth of the plate was possibly three-quarters of an inch, possibly a little more and possibly a little less.

482 Q. 27. And when you say the depth of the plate you mean the height of the flange?

A. The height or depth of the flange projecting from the under side.

Q. 28. When, if at any time, was your attention called to the so called Wolhaupter plate, and describe this plate as you saw it.

A. Within the next two or three years, date not definite, there was brought to my attention a plate which was known and described as the Wolhaupter plate, and we were urged to adopt it by the party bringing it to our attention, instead of the Servis plate. It did not, however, seem to me as well adapted for the purpose I had in view as the Servis plate, and I continued to use the latter. The character of plate known as the Wolhaupter was somewhat different from the Servis, in that the flanges were located differently, were of different shape and did not serve the purpose for which I desired flanges on a plate as well as the Servis plate. These flanges, however, ran parallel with the plate and with the fibre of the wood, but were very

much more obtuse at the base or next the plate, and were closer together than those in the Servis plate. The two outside flanges were not immediately adjacent to the outer edge of the plate as in the Servis, being located possibly one-half inch inside the outer edge of the plate. On the top there was a groove "V" shaped, I think immediately over each flange described above and therefore running parallel to the plate. The number of spike holes I do not recall. The thickness was possibly the same as the Servis, I do not recall any difference in that particular feature, and it was difficult to tell as to the thickness of the plate, owing to the fact that its form was made up of flange and plate in such a way as to combine the two, rather than, as in the Servis, simply having a flange as an adjunct to the plate itself.

Q. 29. What was the effect of this construction of the bottom flanges on the bottom?

A. It gave the appearance of what I might call arches, that is, the flanges joined the plate in such a way that there was no flat portion evident, and while the surface presented was not round and made up of planes, it still gave the idea of an arched construction.

Q. 30. As the result of the examination of this Wolhaupter plate in comparison with the Servis plate which you employed, did you change, or adhere to the Servis?

A. I did not change, but adhered to the Servis.

483 Q. 31. I wish you would state whether, about this time, you observed any track of the Southern Pacific in which Servis plates were employed, and tell the condition of affairs on such part observed, if any, as to the plates.

A. I had accidentally come under my observation a curve on the Southern Pacific over which there was very heavy traffic, and around which trains passed at high speed, and found that this particular track was supplied with Servis plates. Being interested in the action of the Servis plates in all points similar to those on my own line, I examined the condition of these plates and was very much surprised to find that they were curling up on the outer side, or, as we often express it, buckling. On calling the fact of the condition of these plates to the attention of the Southern Pacific engineer, I learned that it had not been observed by him, but that an investigation would be ordered, and later the Southern Pacific Engineer sent me the result of his investigation.

Q. 30. Upon your entering into the service of the Santa Fe, I wish you would state what if any investigation you made as to tie plates, what if any tie plates you found in position on the line, and the condition and apparent result of their service so far as you observed it?

A. I found on the Santa Fe, that the standard plate in use was the so called Wolhaupter, which had been brought to my attention while I was with the San Francisco & San Joaquin Valley, and I became very much interested in comparing same with the Servis, and the action of same under the rail. The investigation showed many of the plates, and in fact nearly all that had been in any

length of time showing rapid deterioration in the way of curling or buckling.

Q. 31. When was it that this investigation and observation began on the Santa Fe?

A. It began in 1900.

Q. 32. What was the condition of the ties upon which these Wolhaupter plates were used?

A. The condition of the ties after they had been in use for any length of time was bad, the top of the tie under the rail, or that portion on which the plate rested, was badly softened, the fibre apparently having no holding power. And toward the later part of my observations I began to note that rot appeared, and when tie plates were taken off the fibre would adhere to the tie plate, leaving the rot more plainly discernible, and it became necessary in all cases after these plates had been used for any length of time and
484 removed to adze the tie to enable another plate to be used or even to allow the rail to set down on the tie without plate if the tie was to be inserted in a side track, or wherever it might again be put into use.

Q. 33. I believe that you neglected, in your description of the Wolhaupter plate, to tell the depth of the flanges on the Wolhaupter plate; can you do so now?

A. According to my recollection, it was about the same as that on the Servis, that is, it might be three-quarters of an inch, somewhat more or somewhat less.

Q. 34. What was the difference, if any, between the flanges on the Wolhaupter plates and the Servis plates?

A. Those on the Wolhaupter plate were very much broader at the base, the angle that they made with the plate itself being much more obtuse than in the Servis plate.

Q. 35. Well, were these Wolhaupter plates which you saw on the Santa Fe track, of the same description as those that you have already described?

A. Just the same, so far as I can remember.

Q. 36. How long after you entered the Santa Fe service did they so continue to use the Wolhaupter plate as its standard?

A. For several years, possibly four.

Q. 37. I wish you would state whether you recall any investigation on the subject of tie plates being made by the Santa Fe officials and employes at any time, and if so, when?

A. I can not recall when. The subject of tie plates has been under investigation by the Santa Fe people ever since I have been connected with the company, and has been very extensive so far as getting reports from our own people and so far as getting reports from other companies is concerned.

Q. 38. Do you recall at any time being advised or knowing of an investigation by Mr. Faulkner?

A. I knew that such an investigation had been made by him by the report which he made to our people.

Q. 39. Did you have anything to do with that investigation and report at the time?

A. Nothing whatever.

Q. 40. Who was the Chief Engineer of the system at that time?

A. Mr. James Dun.

Q. 41. Is he now living?

A. He is not living.

Q. 42. When was it that for the first time, if ever, you took up the question of the design of tie plates?

485 A. I had given more or less attention to the design of tie plates from my earliest connection with them and the use of them while on the San Francisco & San Joaquin Valley. I began designing definitely, however, to try and produce a tie plate which would be used by the Santa Fe road, after my arrival in Chicago as Mr. Dun's successor. As to the exact time when I began such study for such a definite plate, I can not say, but somewhere between 1906 and early in 1908.

Q. 43. When you came to Chicago, in 1906, what form of plate, if any, was then being purchased and used by the Santa Fe system, if you know?

A. The Santa Fe standard at that time was what is known as the flat bottom plate which, as its name indicates, had a flat bottom; the top surface, however, was provided with a shoulder to go on the outside of the rail and parallel to the same. The surface of the plate under the rail was canted so as to turn the rail toward the center of the track, somewhat in the same manner as I have described in the Sacramento plate. There were flutings or corrugations in the surface of this canted portion and under the rail and lying parallel to the shoulder. The number of spike holes was, I think, three, but I am not entirely sure on that point. The thickness was on an average somewhat less than half an inch, and the dimensions, about six inches wide by eight inches long, the six inch dimension being in the direction of the rail, the longer dimension being parallel with the tie.

Q. 44. Now this form of plate, you say, was standard?

A. Yes, sir.

Q. 45. Do you know of the form of plate marked Exhibit N being employed to any extent on any special part of the system?

A. I simply know that in the course of my investigation plates were shown me of this type, as having been ordered and put in service.

Q. 46. But about their practical use you do not know?

A. The practical use I know nothing of, except as I get it from reports.

Q. 47. Look at the blue print marked Exhibit I, and state whether you knew at this time, that is, about the time you came to Chicago, of a plate of that description having been ordered or used on any part of the Santa Fe system?

A. I have no knowledge of it. I remember seeing a print of this same description, but do not recall any of those tie

486 plates having been inserted. The records do not pertain to my department.

Q. 48. When you took up this special study in Chicago, what was the line of your first study as to tie plates?

A. I had reports to the effect that the tie plate then in use was cutting into the tie, and my first investigation was to find why this should be, and determining that it was due to the fact that it did not distribute the weight of the rail and of the load on same over a sufficient area of the tie, I determined what size was best adapted to carry the weight which would come to it. I further considered, in connection with this, the width of the ties on which the tie plate would be used, and after determining the width of the plate, by which I mean the distance longitudinally with the track, I necessarily arrived at the length. After considering and determining the dimensions, a study as to the thickness of the plate became necessary, and this was determined by the necessary thickness at the point of the plate immediately under the outside edge of the base of the rail. The amount that projected beyond the rail determined this thickness. These are the first points that I determined in regard to tie plates.

Q. 49. You have spoken of complaints having been made that the tie plate then in use cut into the tie; what type of tie plate were those?

A. The plate which was then standard and which I have just described and designated as the flat bottom plate.

Q. 50. Were there any complaints of those plates in any other respect?

A. Not in that original construction. Later on, there were complaints in regard to that, but the point which I originally started to study was in regard to the size and the reason for the cutting. The design of a tie plate is successive and one point leads to another, and before the design which is now in use on the Santa Fe was ultimately adopted many other considerations came in. The answer I gave was in reply to your question as to what points first led to consideration of a new tie plate.

Q. 51. Well, what was the subsequent complaint on this flat bottomed plate, if any?

A. One of the complaints was that it would not hold the track in gauge.

Q. 52. Now in this connection, and while you were making this study, did you draw any sketches or plans?

A. Many of them. I made many sketches, many plans
487 and had many calculations and figures made that would take into account and give me determination of fibre stress in the metal and as to the loads that were to be transmitted that had to be taken care of and of the final amount per square inch that should be allowed to go to the tie.

Q. 53. Well, during the course of this investigation and study did you consult any manufacturers on any questions that arose, if so, whom?

A. I consulted many people connected with the tie plate industry, and as to whether they were agents or manufacturers themselves, or the concerns simply handling the business of tie plates, I do not

know. I simply talked with all men that I could find that were conversant with tie plates, that were interested in tie plates, and in some cases with men engaged in rolling tie plates.

Q. 54. Well, during this period did you meet a representative of the Railroad Supply Company, if so who was he and what occurred?

A. My recollection is that I met a representative of the Railroad Supply Company, at any rate, I met Mr. Bell, who I was given to understand was a representative of that company, and discussed these sketches with him, and learned from him that this plate very much resembled the plate which they were then rolling for the Southern Pacific Company.

Q. 55. Did you show him the pencil sketches?

A. I did; that is the way he came to make that remark, and the way I learned of this from him. And he furthermore offered to send me a print or a specimen, I have forgotten which, and he did so, from which I learned the type of plate and the design of plate which he was, or his company was furnishing the Southern Pacific Company.

Q. 56. What, as a matter of fact, is the resemblance between the sketch exhibited to him and the plate or sketch that he sent you?

A. It was very similar so far as general appearance was concerned; the dimensions were somewhat different so far as length and breadth were concerned; the thickness was also different; the location of the grooves were about the same, but the dimensions of the grooves differed somewhat, and the configuration of the grooves differed somewhat. The shoulder I don't recall exactly, as to whether that was the same; it certainly wasn't exactly the same, but it was similar.

Q. 57. Well, did you ever, at any time, see any tie plates
488 of the kind that you had sketched, and which were shown you by Mr. Bell, in actual use, if so when and where?

A. I saw them being inserted on the Southern Pacific track in Texas on the Sierra Blanca hill and found that they were placing them all up and down the entire mountain.

Q. 58. Prior to this interview with Mr. Bell, had you seen a tie plate of this kind, or a sketch of the same, or received any suggestions from him or the representatives of the Southern Pacific or from the Railroad Supply Company?

A. Not that I have any recollection of whatever.

Q. 59. So that, so far as the Southern Pacific railroad, the Railroad Supply Company or anybody connected with it, you had had nothing suggested to you when you had prepared this pencil sketch?

A. I have no recollection of having had any such suggestion, at the present time.

Q. 60. During this study and investigation did you at any time have in your possession or see any aluminum models of tie plates?

A. I have no recollection of having seen any.

Q. 61. Did you at any time in this study and investigation of tie plates that you made, confer with or receive any suggestions from Mr. E. O. Faulkner?

A. I did.

Q. 62. About what time?

A. I had practically completed the design, about the middle of 1908. At that time Mr. Faulkner returned from a trip he had been making in the interest of the company, and I showed him what I had in mind, which did not include ribs on the bottom of the plate. Mr. Faulkner suggested that he believed ribs at right angles to the tie would be a distinct advantage, and I then went into a very careful investigation of the subject from that point of view, and added these ribs at his suggestion and after reaching the conclusion myself that they were necessary and would better the plate.

Q. 63. Please look at the blue print drawings marked Exhibits P and Q, referred to in the evidence of Mr. E. O. Faulkner, and state who prepared those, if you can?

A. They were prepared under my direction.

Q. 64. And what do they embody or show?

A. They embody practically all the dimensions of the various types of plate which are now standard on the Santa Fe system.

489 Q. 65. I wish you would state the fact as to whether or not these are the results of your study and investigation?

A. They are the results of my study and investigation, and we designed for the various sizes of rail, there being a difference in dimensions in the lighter rails from the dimensions of those for the heavier rails. There are also different forms of surface on which the rail is to bear to be used indiscriminately so far as the use of tie plates themselves is concerned.

Q. 66. Look at the tie plate Exhibit R, and state what if any relation that bears to your blue prints in your work?

A. Exhibit R is a plate rolled on one of the designs prepared by me and shown on the blue prints referred to.

Q. 67. What was the purpose of your consulting with the tie plate people, the manufacturers or representatives of manufacturers, and the people who dealt in tie plates?

A. More especially to learn relative to objections there might be to rolling various forms, and to find out forms and shapes from which rolls could be made, and as to what objections, if any, existed to certain studies which I had made and which I had in mind.

Q. 68. At any time in this study and investigation of yours in reference to tie plates, were there any milled plates submitted to you, if so at about what stage, and tell us how it came about?

A. By milled plates I understand those not rolled in the particular shape referred to?

Q. 69. Yes.

A. There were.

Q. 70. Please tell us how that came about.

A. After I had prepared certain plans I wished to make certain tests to find whether the plates designed were strong enough, and I requested our purchasing department to obtain for me plates made in accordance with the blue prints which I gave them, and upon these being furnished I found that they were made in a machine and not rolled, and I used them for making tests as to the action of the plate

under pressure, and I am not sure as to whether the result of those tests caused me to make any changes in the details of the dimensions or not; but the purpose of that investigation was to find whether such changes were necessary.

Q. 71. Well, if any changes were made, what was their character as to importance of the alteration?

A. Simply as to making the plate a little fuller here or a
490 little thinner there; nothing as to the general principles involved in the design of the plate.

Q. 72. And I understand you to say you furnished the plans and specifications for these milled plates?

A. Yes, for any that were given me, yes, sir.

Q. 73. And were they made in accordance with the plans and specifications furnished?

A. They were.

Q. 74. Do you know from what source they came?

A. I do not.

Q. 75. From what source did you obtain them personally?

A. They were brought into my office by the purchasing department's representatives.

Q. 76. What is the effect or function of ribs upon the lower surface of a tie plate parallel to the rail and transverse to the tie?

A. In the plate designed by me the function is to prevent the spreading of the track and hold it in gauge better than could be done without such ribs.

Q. 77. And what is your judgment as to the effect of such ribs?

A. As designed by me the effect is exactly in accordance with the design, that it does prevent the outward motion of the track and tends to hold it in gauge.

Q. 78. Examine the various tie plates and models which have been offered in evidence, and which are now placed before you, being Exhibits B, C, F, G, H, M^1, N, O, O^1, O^2, O^3, O^4 and R, and state which tie plate in your opinion is the nearest or closest to Exhibit R in all respects?

A. Exhibits C and B.

Q. 79. Please look at the drawings attached to Letters Patent to I. Wells, 203,570, Railway chair, patented May 14, 1878, and describe the structure which you find therein.

A. I find a plate with a flat bottom with the exception of a rib under same running longitudinally with the plate, as it is shown on this drawing, and with the surface of the plate indented with two grooves parallel to the projections under the plate, and with two shoulders one on each side and projecting above the general surface of the plate. The two channels or grooves referred to on top being on each side of the center of the plate forming a bearing surface or ridge between them.

Q. 80. In your judgment, if the device shown in these
491 drawings were cut up by cross sections so that each section were five or six inches long, could such sections be used as tie plates?

A. They could.

Q. 81. What is the effect, if your judgment, or function of the lower projection or rib shown in these drawings?

A. To prevent the movement of the plate outward on the tie.

Q. 82. What is the function of the shoulders?

A. To prevent movement of the rail on the plate.

Q. 83. What is the function of the surface inside of the shoulders?

A. To carry the rail.

Q. 84. What, in your judgment, is the function or effect of grooves longitudinally to the rail on the upper surface of tie plates? For instance, such as are shown in Exhibit R?

A. It has no function and has no effect except to lighten the weight of the plate.

Q. 85. In your judgment is there any basis for the theory that such grooves benefit and add to the desirability of a tie plate by carrying off sand or water?

A. In my judgment they have no such action and are not desirable from that point of view.

Whereupon an adjournment was taken to November 26, 1909, at 10.30 o'clock A. M.

November 26, 1909—10:30 o'clock a. m.

Met pursuant to adjournment.
Present as before.

W. B. Storey, Jr., resumed the stand for cross-examination by Mr. Brown:

X Q. 86. I believe you stated that the plate that was known as the Sacramento plate was the first tie plate that ever came to your observation, and that it was somewhere between 1890 and 1894, is that correct?

A. That is my recollection, as far as I remember at the present time.

X Q. 87. Please describe the top surface of that tie plate as nearly as you can remember it.

A. It had a shoulder on the side of the plate that would correspond to the outside of the rail; the plate was nearly square, possibly
492 seven inches each way, and immediately inside the shoulder the surface of the tie plate on which the rail rested had a slight inclination in order to tip the rail toward the center of the track. I do not recall the number of spike holes.

X Q. 88. And this Defendants' Exhibit G, is that precisely like the Sacramento plate that you first saw, or does it differ somewhat, and if so in what respect?

A. Well, I can't say in regard to that. The plate has the resemblance of the plate that I saw first; it is a great many years ago that I first saw it and I do not recall it in detail. It is somewhat larger, I can say, than my conception was of that plate, and yet it may have been the same size.

X Q. 89. You stated that you found the Servis tie plate in use on the Santa Fe system when you became associated with that sys-

tem as Chief Engineer, and that there were some changes made in the details of the construction of that plate which you considered objectionable. Did your objections extend to the character, shape or depth of the bottom flanges of the Servis plate?

A. I did not say that when I came with the Santa Fe it was using the Servis plates, or, if I said so, I did not intend to say so. The road to which I think you refer is the San Francisco & San Joaquin Valley, and I adopted the Servis plate for that road, adopted a certain pattern of the Servis plate and later changed the form somewhat. The change, at first, seemed objectionable to me, but the advantages outweighed the objections and I finally adopted it in its changed form.

X Q. 90. Yes, the San Francisco & San Joaquin road subsequently became a part of the Santa Fe system, that is how I made the mistake in my question. Well, did the objections which you had at that time to the Servis plate extend to the shape and depth of the lower flanges?

A. They referred not at all to the shape, but to the number of the lower flanges.

X Q. 91. And not at all to the depth of them?

A. Not to the depth.

X Q. 92. And what was the depth, as you remember it?

A. Might have been three quarters of an inch.

V Q. 93. When asked, in question 28, when your attention was called to the so-called Wolhaupter plate, you answered:

"Within the next two or three years, date not definite." Can you fix this date a little more definitely?

A. By simply saying within the next two years after 1895, which would make it somewhere between 1895 and 1898.

493 X Q. 94. Do you remember the relative weight of the Servis plate and the Wolhaupter plate that were used at that period?

A. I do not. My impression is they were somewhat near the same, they were not greatly different. The weight, I should assume, was somewhere near the same.

X Q. 95. About what was the character of the traffic or rolling stock going over the Santa Fe tracks at that period, as compared with the present weight of rolling stock? I don't mean volume of traffic, I mean——

A. Do you refer now, by saying "that period," to 1897 and 1898?

X Q. 96. The period just mentioned as the period when you had the Wolhaupter plate and the Servis plate together on the Santa Fe.

A. I don't thnk I said I had the Wolhaupter and the Servis plate together on the Santa Fe. I said I had the Wolhaupter plate brought to my attention and continued to use the Servis, did not put in any Wolhaupter. If you are referring to the character of the traffic on the San Francisco & San Joaquin Valley, it was not heavy because the road was in process of construction at that time; and of course later when it became part of the Atchison, Topeka & Santa Fe the traffic increased and has been increasing from that day to this. It is continually on the increase.

X Q. 97. Well, on what road did you first see the Wolhaupter tie plates of the arch and girder type, that you have mentioned?

A. In use?

X Q. 98. Yes.

A. So far as I can recall it was on the Atchison, Topeka & Santa Fe.

X Q. 99. And that was about when?

A. After I came with that road, in 1900.

X Q. 100. And that was the first tie plate that you had seen with corrugations on the top, was it?

A. In service in the track?

X Q. 101. Yes.

A. So far as I recall, yes.

X Q. 102. Now what was the the character of the Santa Fe rolling stock at that time as compared with its character today? I am not speaking of volume of traffic.

A. The weight on the drivers was not very much different from what it is today so far as the weight that comes to the rail is
494 concerned, that is the heaviest load that comes on the rail, is the driving wheel. The weight on cars is somewhat heavier today than it was then.

X Q. 103. Do you consider that the Servis tie plate, as you had it in use on the San Francisco & San Joaquin Valley road was heavy enough for the traffic being used there?

A. At that time?

X Q. 104. Yes.

A. The plate was largely an experimental plate. If I were putting in a plate today I should not use that plate, and if I used that particular type of plate I should probably use a heavier plate, not very much, however. The tie plate science or art was at that time practically in its infancy, and no one knew relative to tie plates and their action under traffic. What I have learned since then would lead me to take an entirely different form of plate.

X Q. 105. Yes, but as to that particular form, if you were using that today, you would make it a heavier plate, would you not?

A. I don't——

X Q. 106. That would really be more of the arch and girder type of the Wolhaupter, would it not?

A. I wouldn't use that today, under any circumstances.

X Q. 107. But I am asking you now if you used that arch and girder type?

A. It is an unsupposable case.

X Q. 108. I am asking you, if it were necessary, or you were instructed to use the arch and girder type of Wolhaupter plate you would necessarily make it a heavier plate than the plate that you saw when you first saw the Wolhaupter plate, would you not?

A. Well, I can't answer the question because the question of size, of number of spike holes, and a great many details that go into a type of tie plate would cut some figure. I can't say definitely that I would make a heavier plate, except I can say this, so far as weight in pounds, yes. By the word "heavier" if you refer to general thick-

ness and number of flanges and things of that kind, why that is something I can't answer without study.

X Q. 109. I was not asking you to assume a re-designing of that arch and girder type of Wolhaupter plate, I was simply attempting to get your idea as to whether or not that plate was too light for its intended or expected use?

A. No, I doubt if it was, I think the trouble with it was due to the form and shape of the plate.

495 X Q. 110. So that it is your opinion, even if that form of plate had been made of greater dimensions, that is, a heavier plate, it would still have the objections that you now entertain?

A. Excuse me, with the objections that I entertained at first. I may have other objections at the present time.

X Q. 111. At first, yes. The so-called flat bottom plate, Santa Fe standard, which you say was adopted about, or which was standard between 1904 and 1908, say, differed in what way from the Sacramento plate?

A. In that it was somewhat heavier, differed in size and in details of that kind. But the principal difference was in the fact that it had flutings on top of the plate running parallel to the shoulder on the side, and parallel to the rail.

X Q. 112. You said something about the Servis tie plate on the Southern Pacific road which you examined, curling up on the outer side or, as you expressed it, buckling, why was this, if you know?

A. Due to the fact that the plate was not properly designed.

X Q. 113. Through your direct testimony, in speaking of the Wolhaupter plate, have you reference to any other form of plate than what has been mentioned here as the arch and girder type?

A. No. I don't recall having used the words arch and girder in my examination. I am not so sure where that reference was made.

X Q. 114. The witness Mr. Faulkner mentioned it as of that type, and that phrase was used throughout his examination, and I believe you were present throughout his entire examination, were you not?

A. Not entirely.

X Q. 115. You have in mind, though, what I mean by the arch and girder type Wolhaupter plate, have you not?

A. I understand the term that has been used, but the only reason I raise the point is in order to be sure that I identify the plate, that we understand each other, so far as the plate which is under discussion is concerned. The plate that I have in mind as the arch and girder type, and as the one I was speaking of in my direct examination, was the one which I described in that examination.

X Q. 116. And that is the Wolhaupter plate that the Santa Fe used as its standard for several years?

A. Yes, sir.

X Q. 117. And that is the only Wolhaupter plate you have in mind in your examination?

496 A. Yes, sir.

X Q. 118. Did you ever hear the flat bottom plate which

was standard on the Santa Fe in 1906 when you became the Chief Engineer of the system, spoken of as a Wolhaupter plate?

A. I can't say definitely that I recall that. The fact of the design of the plate having been worked out in connection with Mr. Wolhaupter, associates his name with that plate in my mind to a certain extent, but I don't know that I ever heard the plate called the Wolhaupter plate.

X Q. 119. You state you remember having seen a print like the blue print marked Exhibit I; will you please refer to Exhibit I and state about when you first saw that blue print or one like it?

A. No, I cannot give any idea of when I first saw it. It simply came up incidentally in the course of the study of tie plates in my ordinary work, and I have no recollection as to when the print first came to my attention.

X Q. 120. Can you state approximately the date when you took up the special study of tie plates in Chicago?

A. No, only to say that it was after I came to Chicago, and as to exactly when I can't say, because I kept taking it up at different times up to the time that we finally adopted and decided on the type that would be used, so that I can't say just the time it was taken up; probably during 1907.

X Q. 121. And can you say with reference to the time when you were working specially on these tie plates whether this blue print Exhibit I was called to your attention before you completed your studies or not?

A. No, sir, I don't recall that. My thought is that I saw this before that; that I first saw this before I began specially to design; that it came to my attention as a great many other prints and pictures and cuts had come to my attention, but I cannot recall anything definitely in regard to it.

X Q. 122. This Exhibit I is lettered "A. T. & S. F. System, proposed tie plate for 85 lb. steel rail, scale, full size, Topeka, Kan., May 5, 1904"; would you say from this lettering that the tracing from which this plue print was taken had been made by some official or draughtsman of the Santa Fe system?

A. Yes, sir. It was not only that, it was made in my office. I had charge of the Topeka office at that time, but Mr. —— I don't recall the man's name, had charge of the draughting in the office and I don't recall having given the matter any attention myself at that time. But the office of the Chief Engineer of the system
497 was at that time in Chicago, and simply for purposes of the study it was probably made by a draughtsman in the Topeka office.

X Q. 123. And this blue print, Exhibit I, shows two ribs on the under side of the tie plate running parallel with the shoulder and with the rail, does it not?

A. Yes.

X Q. 124. And Mr. Faulkner called your attention to that form of construction and suggested using ribs underneath the plate and parallel to the rail, did he not?

A. He did.

X Q. 125. And can you give me any idea as to the length of time that you devoted to this special study of tie plates before the final designs were adopted?

A. I think the greater part of a year and a half, taking it up at different times and under different circumstances, and waiting from time to time till I could have conferences with different people.

X Q. 126. I suppose you made a number of sketches of different styles or types of plate did you not, during that period?

A. Well, sketches of hardly different types, they were practically all the same type. My ideas had been forming for a number of years on what I wanted, but differing in details, such as width and length and thickness and in this matter of the rib underneath and the matter of making some for screw spikes or a lug on the outside, but those are all details of one general type.

X Q. 127. Now what are the features of the plate as finally adopted that you had in mind from the very beginning, aside from the mere question of detail?

A. Probably it could be expressed closest by saying a plate of the general type of the Sacramentoplate.

X Q. 128. Then you considered the question of top corrugations as a matter of detail, did you?

A. Absolutely; they have nothing whatever to do with the design of the plate.

X Q. 129. And likewise the ribs underneath are a matter of detail?

A. No, that has something to do with the function of the plate.

X Q. 130. Were the various sketches that you made from time to time during this year and a half of special study, preserved?

A. No, sir, I doubt if they were preserved. I don't recall having seen any for some time.

498 X Q. 131. Were any scale drawings, or drawings approximating service sizes made of plates other than the particular drawings from which the blue prints Exhibits P and Q were taken, during that period?

A. Yes, sir, I think there were.

X Q. 132. Were any of those drawings preserved?

A. That I can't answer.

X Q. 133. I wish you would investigate, or cause an investigation to be made to ascertain whether or not any such drawings were preserved and if so, submit them; will you do that?

A. I will.

X Q. 134. Now as to the tie plates shown in these blue prints Defendants' Exhibits P and Q; do you claim to have originated or invented anything shown on those blue prints in the way of a tie plate?

A. In that I never saw a plate exactly like that, I claim to have originated the final results.

X Q. 135. When you say you never saw a plate exactly like that, do you mean exactly like that in detail, or do you mean exactly like that in general features?

A. In details.

X Q. 136. Take the right hand figure, for example, which as I

understand it represents the plate which is now standard on the Santa Fe system——

A. No, sir, any of these are standard on the Santa Fe system.

X Q. 137. Take the right hand plate, for example, how is that plate distinguished on the Santa Fe system from the other two plates, how do you designate it?

A. I can't answer that question.

X Q. 138. I understood you to say that all three of the types of plate shown on these two blue prints are standard on your system.

A. Yes, sir.

X Q. 139. Now is there no way of distinguishing by name between those three standard plates?

A. It is possible to have adopted some lettering or something of that kind that will distinguish them.

X Q. 140. What is that lettering?

A. That I don't know. I say that is possible, that there may be some way of distinguishing them; it would be a simple way of doing it.

X Q. 141. Well, if you were writing a letter to the pur-
499 chasing department requesting them to order any one of these three plates, how would you designate the plate you wanted them to purchase for you?

A. That is another unsupposable case. I would ask the purchasing department to furnish so many tie plates of either section that they chose.

X Q. 142. Suppose you wanted a particular one of those three tie plates for some special purpose of your own, how would you designate them in the request to the purchasing agent?

A. I would refer to the print. If I was referring to this particular print I would speak of it as the right hand, the middle or the left hand drawing.

Mr. Brown: Will you please mark on these two exhibits P and Q the letters A, B and C, as representing the right hand, the middle and the left hand plates?

Witness does so.

X Q. 143. Now please look at Exhibits P and Q and at the left hand figure, which I understand you have marked with the letter "C"; what are the features of detail of that plate which you claim to have originated or invented, aside from dimensions or proportions?

A. The arrangement of the ribs interlocking one another, and the connection of those ribs with the flat surface immediately adjacent to the shoulder, and the flat surface on the opposite side from the shoulder; this is on the top, that, I believe is my idea in regard to the design of the plate as it now exists.

X Q. 144. Are there any features of construction on the bottom of the plate to which you claim originality?

A. No, sir.

X Q. 145. Please look at the second figures, those lettered "B" on these exhibits P and Q; are there any features of construction to which you claim originality on the bottom of those pates?

A. No.

X Q. 146. Please state what features of construction are shown on top of the plates to which you claim originality?

A. It is my impression that the form of the depressions in the top, so far as the general shape is concerned, is my idea. The details of that shape, so far as form of sides and ends of the depressions, was made after consultation with rolling mill men who said that they could roll a plate of that particular shape.

500 X Q. 147. Is there anything on the bottom of the plate A, of these same exhibit blue prints in the way of construction, to which you claim originality?

A. There is not.

X Q. 148. What is there in the way of construction on top of plate A, to which you claim originality?

A. Simply the shape of the depressions, the width of the bearing surfaces. But I hardly think that either of those could be called original.

X Q. 149. It comes more under the head of designing, does it not, than inventing?

A. Comes more under the head of designing in regard to the dimensions of the plate. Possibly the matter of design so far as I am responsible for it is the character in which the top is lightened by introducing a groove or two grooves in the top, and the location of those grooves.

X Q. 150. Now when were these three styles of tie plate adopted as standard on the Santa Fe system?

A. I think it was in—the date that is given on the print is September, 1908, that is about the time the matter was taken up.

X Q. 151. Since the date of the adoption of these three types of plate as standard, the Santa Fe system has purchased tie plates, has it not?

A. Has purchased tie plates, yes, sir.

X Q. 152. About how many tie plates like figure B, of these drawings, have been purchased if you know, or ordered?

A. I don't know, I have no knowledge of any number of tie plates that have been ordered or of the kinds.

X Q. 153. You don't know whether any of figure B have been ordered?

A. I do not.

X Q. 154. Do you know whether any tie plates like Figure C have been ordered?

A. I do not know whether they have been ordered. I know that some have been made because a sample was shown me.

X Q. 155. Do you know whether tie plates like figure A have been ordered?

A. They have.

X Q. 156. Have you any idea as to the relative number of tie plates of these three patterns that have been ordered?

A. No. I have an idea there has been a larger number of A, but I don't know definitely.

501 X Q. 157. Have you any idea of whom the plate like figure B or figure C have been ordered?

A. I have not.

X Q. 158. When did you see the plate like figure C?

A. I don't recall; it was within the last six months.

X Q. 159. Who in the Santa Fe system would know whether tie plates of these three patterns or either of them had been ordered, and the relative quantities?

A. Probably some employe of the purchasing department. I think probably the chief of the purchasing department.

X Q. 160. Do you know when and where the first plates like figure A were purchased or obtained by the Santa Fe system?

A. I do not.

X Q. 161. Or when?

A. I do not.

X Q. 162. You know that tie plates like figure A of the exhibit, are the subject of this litigation in which you are giving your deposition, do you not?

A. I understand they are.

X Q. 163. Do you know what interest, if any, the Santa Fe system or railroad company has in this litigation?

A. No, sir.

X Q. 164. Have you any personal interest in it yourself?

A. None whatever.

X Q. 165. Direct or indirect?

A. Direct or indirect.

X Q. 166. You have come here voluntarily as a witness, have you?

A. I have.

X Q. 167. And you have been in attendance during the four days' session that we have held in taking depositions, have you?

A. Nearly all the time.

X Q. 168. You stated that you are a civil engineer by occupation; what position do you hold on the Santa Fe system?

A. Vice President of the Santa Fe system.

X Q. 169. You stated in your direct examination that after you had prepared certain plans you wished to make certain tests of tie plates, and requested your purchasing department to obtain plates made in accordance with the blue prints "which I gave them." What blue prints did you have reference to?

A. Why, I don't know how I can describe them; they were
502 simply blue prints that I gave them at that time and requested them to have plates made on those prints.

X Q. 170. Have you got those blue prints preserved, do you know?

A. I have doubts about it. They may be part of the ones that you asked me to see if I could find. It would be very hard for me to identify exactly those that I had the particular plates made on, because I don't recall exactly at what stage of the design that I submitted those prints.

X Q. 171. Did either of those blue prints show a design of plate like or substantially like either of the figures A, B and C, on Defendants' blue prints Exhibit P and Q?

A. Very similar to the figure A on Exhibit Q.

X Q. 172. And I believe you said that a tie plate was furnished you in accordance with your request?

A. Yes, one or more, I don't recall how many I had or how many tests I made.

X Q. 173. Then you had certain tests made of that plate as a result of which you made certain changes in the final design; can you state at this time what changes you made?

A. My recollection is it was in the portion that comes outside the portion between the shoulder and the edge of the plate on one side and between the outside edge of the rail and the edges of the plate on the other side, on the top.

X Q. 174. That is the location of the change; now what was the change?

A. According to my recollection. That I don't recall whether it was thickening it or—my thought is now that I made it a little thicker close to the rail and a little thinner away, but I won't be absolutely certain on those details.

X Q. 175. But nothing which involved the general design?

A. Nothing whatever.

X Q. 176. Were the plates that were furnished you for that test rolled plates, do you remember?

A. I think not; I think they were made by working with a tool.

X Q. 177. Machine made plates?

A. Yes, that is my recollection of them, because I recall that I wanted to have these tests made before we placed orders and required rolls to be made; I wanted to test the details which I had in mind prior to the final adoption of a definite design.

X Q. 178. Do you remember where those plates were obtained?

503 A. No, sir, I do not know where they were obtained; they came to me from the purchasing department.

X Q. 179. Did you ever hear where they came from?

A. No.

X Q. 180. Then you don't know where they came from?

A. No, sir.

X Q. 181. Give the date as nearly as you can when those plates were received by you.

A. I should say somewhere about the middle of 1908.

X Q. 182. Did you ever talk with any representative of the Railroad Supply Company with reference to those plates that were furnished you for that test?

A. I don't recall ever having spoken to them.

X Q. 183. You placed the grooves or depressions in the top surface of the tie plate figure A of the Defendants' Exhibits P and Q, simply for the purpose of lightening the plate, did you?

A. Yes, sir.

X Q. 184. And in your opinion is that the only function that such depressions or grooves perform when the plate is in use?

A. That is my opinion, yes, sir.

X Q. 185. In answer to question 80 of your direct examination,

after having in a previous answer described what you found in Letters Patent number 203,570, to Wells, on a railroad chair, in which you were asked if the devices shown in those drawings were cut up into sections so that each section were five or six inches long, could such sections be used as tie plates, you replied, "They could." Did you mean by that answer they could be so used without any redesigning, rearrangement or readjustment of parts?

A. Yes

X Q. 186. What, in your opinion, is the length, width and thickness of the rail chair shown in that Patent Office drawing?

A. I should say that the length was possibly four feet, although it is extremely difficult to form any idea of the length, due to the nonconformity of the different—that is hardly the word I wish—to the fact that the drawing shows the ties and the rail more in the nature of an illustration and not as a drawing definite in size. To illustrate: If the size of the tie is taken according to our ties in present use, they would be eight inches wide and the rail would be over a foot high; that evidently is not the intent of the drawing, it is
504 simply to illustrate that the plate is to rest on the top of ties; so there is nothing about the drawing to indicate what can be used as dimensions, or to enable one to give anything that you could say was definite in regard to them. I simply mention the length as that seems to be about the only thing that is a guide to size, on account of the fact that it is stretched over three spaces between ties, but it is more of a picture than anything else, so it is hard to give anything definite in regard to those dimensions.

X Q. 187. There is no indication on either figure of the drawings that they are made to a scale is there?

A. I don't see any indication to that effect.

X Q. 188. I suppose you have examined a number of Letters Patent at various times, have you not?

A. Very few of them.

X Q. 189. Did you ever see a Patent Office drawing made according to a scale?

A. I don't know that I ever have. I never have given the matter any attention whatever from that point of view.

Redirect examination by Mr. Reed:

R. D. Q. 190. Do you recall when you first saw the Glendon flange plate, or about when?

A. No, not definitely. It was brought to my attention by a party named Stein, somewhere, I think, before 1900, but I wouldn't be definite on the date.

R. D. Q. 191. And by whom do you understand it was made?

A. Why, it is my understanding that it was made by the Dilworth Porter people.

R. D. Q. 192. Can you describe the corrugations on top of that Glendon flanged plate?

A. Yes, sir.

R. D. Q. 193. Please do so.

A. It was flat in general shape with grooves or depressions which I should say formed fifty per cent. of the surface of the plate running between the projections. The projections or ridges on which the rail rested were parallel with the plate, and if I recall, directly over the flanges underneath. The grooves were more depressions than grooves; they were simply a little lower than the rail bearing part of the plate.

R. D. Q. 194. And how did they run with reference to the tie?

A. Longitudinally with the fibre of the tie.

505 R. D. Q. 195. Examining the illustrations connected with the Wells Patent before referred to, I will ask you whether in your opinion the so-called railway chair shown there performs the functions of a tie plate on the four ties on which it rests?

A. Certain functions of a tie plate, yes.

R. D. Q. 196. And what are they?

A. The function of preventing the rail from spreading on the tie and of increasing the bearing surface of the rail on the tie.

Mr. Reed: That is all.

Recross-examination by Mr. Brown:

R. X Q. 197. You said the Glendon flanged plate had slight depressions on the upper surface, or grooves; do you mean more than one depression in each plate or not?

A. Yes sir; over each of the flanges underneath there was a projection and between those was a depression.

R. X Q. 198. And these depressions were so slight that you would call them depressions rather than grooves, would you?

A. Well, I think that the term groove would apply to them also, but as describing them they are hardly more than slight depressions. The grooves were very slight depressions.

R. X Q. 199. And these slight depressions ran longitudinally of the fibre of the tie; that would bring them in a direction across the rail, would it?

A. Yes, sir.

Mr. Brown: That is all.

Whereupon an adjournment was taken until 2:30 o'clock P. M. of the same day.

November 26, 1909—2:30 o'clock P. M.

Met pursuant to adjournment.
Present as before.

W. B. Storey, Jr., resumed the stand for further re-direct examination by Mr. Reed.

R. D. Q. 200. You were asked to search for any find any studies, tracings or blue prints prepared by you in connection with the work that you did which resulted in the designs shown by blue prints Exhibits P and Q, Mr. Storey; have you done so?

A. I have.

506 R. D. Q. 201. Did you find any such drawings?

A. I found that the tracings were all on file in my office.

R. D. Q. 202. Look at the eight blue prints which you now produce and which are marked Exhibits P1, P2, P3, P4, P5, P6, P7 and P8, and state what those are?

A. They are prints of the tracings which I found in my office after making the search requested.

R. D. Q. 203. I notice that these are endorsed with various dates commencing March, 1908—1; March, 1908—2; April, 1908—1; April, 1908—2; June, 1908—1; June, 1908—2; July, 1908, and August, 1908. What do these endorsements mean?

A. The endorsements of the months refer to the endorsements I find on the face of the tracings showing the month in which the drawing was made in the draughting office. The figures 1 and 2 following these month designations refer to the time in the month, so far as I can recall, when they were prepared by our draughtsman.

R. D. Q. 204. That is, March, 1908—1, and March, 1908—2, mean that the one marked 1, which is Exhibit P1, was anterior to the March, 1908—2, which is marked P2?

A. That is correct.

R. D. Q. 205. And the same explanation would apply to the other numerals 1 and 2?

A. Yes, sir.

Mr. Reed: Counsel for defendants offers in evidence all of the exhibits referred to by the witness in his deposition, and also these eight blue prints as marked.

R. D. Q. 206. State whether or not these drawings show the development of your ideas in the construction of the tie plate?

A. They show it, so far as the tracings which I have been able to find in my office develop it.

R. D. Q. 207. And these are the studies which led to your ultimate adoption of the forms shown on Exhibits P and Q?

A. They are.

Recross-examination by Mr. Brown:

R. X Q. 208. I notice that the first three of the blue prints just offered, namely, P1, P2 and P3, show flat bottom plates without any ribs, and that each of the other five blue prints show bottom ribs; that is correct, is it not?

A. That is correct.

R. X Q. 209. That blue print marked P4, dated April

507 1908-2, is the first one of the series that shows a bottom rib, is it not?

A. It is.

R. X Q. 210. Is there any material difference in construction other than size, between the plate shown in blue print Exhibit P4, and the plate shown as figure A, in Defendants' Exhibit P and Defendants' Exhibit Q?

A. I think there is. I haven't examined the dimensions or the different details, but I notice one difference immediately in the shape of the grooves, one having one style of radius to form the lower fillet and the other having a different radius. I notice a difference in thickness of various parts, but they are very close to the same result with that exception. There is a difference, if you will notice, in the radius of the back of the shoulder, that is a difference in the actual form of the plate.

R. X Q. 211. These eight prints which you have produced as Defendants' Exhibits P1 to P8 inclusive, are all the sketches that you have, together with blue prints P and Q, representing the different stages of your work on that tie plate?

A. They are all the drawings which are of record in the office as having been left after the study for this final adoption of plates shown by P and Q?

R. X Q. 212. I understood you to say that you had made a number of sketches, and I assume that from the production of these ten blue prints these are the only ones that were of sufficient importance to be preserved?

A. Probably these are all that were made on tracing cloth and kept in the records. There were numbers of pencil sketches which were handed to the draughtsman from which these were prepared. I find nothing that givs me an indication of how much of that study had been done before.

R. X Q. 213. Who was the draughtsman that executed the tracings for you?

A. I don't know. My recollection at the present time is that there were different draughtsmen. I simply handed the work to the officer in charge of the draughtsmen, and he sent the draughtsman to me and I made corrections and suggestions and issued instructions which finally resulted in the tracings as submitted.

R. X Q. 214. I notice on these blue prints that have just been offered, lettering and spaces for signature, indicating that the drawings were approved and adopted, but I notice that the sig-
508 nature is only on one drawing or blue print, to-wit, P4, "Approved W. B. Storey, Jr.;" is this the only one of the eight that was formally approved?

A. There weren't any of them formally approved. To make them standard on the Santa Fe it was required that they should bear the signature of the Chief Engineer of the system and the Vice President in charge of operation, and in that one to which you refer you will notice that the signature of the Chief Engineer there has a line drawn through it as cancelling it, and while at the time that I signed that tracing I believed it in shape to be adopted, further consultation I think with the Vice President led to further study.

R. X Q. 215. Who was the Vice President at that time?

A. J. W. Kendrick, and he is at the present time in charge of that same department.

R. X Q. 216. And what was the date when you signed this drawing?

A. Probably in the month in which it is signed, the month that

is noted on the print. I can't say definitely that it was that month, but it was about that time, possibly a little later.

R. X Q. 217. That is, about April, 1908?

A. In April, possibly May.

R. X Q. 218. And about how long after that did you have this conference with Vice President Kendrick which led you to erase your signature?

A. I can not answer that, don't know.

R. X Q. 219. Did you have any conference with any other official as to this plate at that time?

A. I believe I conferred with Mr. Faulkner. I won't say just when I met him or when I talked to him; I know I had conferences with him in regard to the design of the plate.

R. X Q. 220. At the time you signed this drawing you were quite satisfied, were you not, with the shape and design and dimensions of the plate as drawn on this Defendants' Exhibit P4?

A. I think I was.

R. X Q. 221. What I mean by quite satisfied is, that you were satisfied to adopt it as standard for the Santa Fe system at that time?

A. I was willing it should be used on the Santa Fe system at that time.

Mr. Brown: That is all.

509 Redirect examination by Mr. Reed:

R. D. Q. 222. At the time of this work in the spring and summer of 1908, were there a number of draughtsmen employed in the office?

A. Yes, sir, there were.

R. D. Q. 223. So that you can not tell which one or ones did the work?

A. No, not for the various drawings. I know that one man for instance, I know his name and that he worked on some one of these, I don't know which one, and some one else on another, but as to the man that prepared them definitely I don't know. Our draughting office doesn't require a draughtsman, when he is working under my instructions, to be of record on the drawing itself.

R. D. Q. 224. I notice that Exhibits P1, P2 and P3, which are being marked March 1908-1, March 1908-2 and April 1908-1, show no bottom ribs upon the design; that is correct, is it not?

A. That is correct.

R. D. Q. 225. And the Exhibit P4, April 1908-2, and I believe all of the rest show bottom ribs?

A. They do.

R. D. Q. 226. Does this fact of the first three blue prints bearing date in March and April, 1908, and the fourth blue print marked April 1908-2 enable you to fix the date of your conference with Mr. Faulkner in any way?

A. No, it will not enable me to say definitely that I had a conference with him at that time. My impression is that it occurred between the making of these two plans but I possibly may have adopted the design with the ribs underneath before having the con-

ference with him. The entire subject was a matter of study by every one concerned during the entire time of the evolution of the plate.

Mr. Reed: That is all.

W. B. STOREY, JR.

Whereupon an adjournment was taken to December 2, 1909, at 10:30 o'clock A. M., at the same place.

December 2, 1909—10:30 o'clock A. M.

By agreement of parties, an adjournment was taken to December 3, 1909, at 10:30 o'clock A. M.

510 December 3, 1909—10:30 o'clock A. M.

Met pursuant to adjournment.
Present, as before.

HENRY W. CARTER, a witness produced and cautioned and sworn before the commencement of any examination, as by statute provided, testified as follows:

Direct examination by Mr. Reed:

Q. 1. State your name, age, residence and occupation.

A. My name is Henry W. Carter; I am 43 years of age; reside in Chicago, Illinois, and am a mechanical expert by occupation.

Q. 2. Please state what if any education and training in mechanical matters and in the comparison of mechanical structures, particularly in relation to patents and inventions, you have had?

A. For nearly twenty-five years I have been continuously engaged in mechanical studies and pursuits, and for the greater part of this time exclusively to such studies and pursuits in their relation to patents for inventions.

I was educated as a mechanical engineer at the Worcester Polytechnic, from which institution I received my degree in 1886. Was then for some years actively employed as machinist and draughtman by various manufacturing concerns, and later received an appointment to the examining corps in the United States Patent Office at Washington, where I remained for several years in the active discharge of the duties of that office.

I resigned from the Patent Office some seventeen years ago and have since been largely engaged in mechanical investigations leading up to the giving of my deposition as an expert witness in patent litigation. For a number of years past my work has been exclusively of this character, and I have been employed in this capacity in upwards of a hundred different causes mostly pending in the Circuit Court of the United States.

Prior to entering the Patent Office I had learned the machinist's trade and was a competent mechanical draughtsman, accustomed to design and construct machinery and familiar with the general run of machine tools and processes. Upon entering the
511 Patent Office I became acquainted with the practice and procedure governing the grant of patents and by which the

rights of inventors are determined. As a member of the examining corps it was my daily duty to critically consider such applications for Letters Patent as were referred to my desk for examination, to compare the mechanism disclosed in the application with the mechanism of the prior art as shown by the records and files of the Patent Office, and to recommend the claims of the applications for rejection or allowance in accordance with the results of my investigations. I am a member of the American Society of Mechanical Engineers and the Western Society of Engineers.

Q. 3. Have you read and do you understand the devices set forth in the three patents in suit, namely, Letters Patent to B. Wolhaupter, tie plate, No. 538,809, patented May 7, 1895; B. Wolhaupter, railway tie plate No. 691,332, patented January 14, 1902, and B. Wolhaupter, tie plate No. 721,644, patented February 24, 1903, annexed to the bill of complaint as Exhibits A, B and C, respectively, and offered in evidence on behalf of complainant as Complainant's Exhibit No. 1, Wolhaupter patent No. 538,809, Complainant's Exhibit No. 2, No. 691,332, and Complainant's Exhibit number 3, Wolhaupter Patent No. 721,644, respectively, considered particularly with regard to the structure set forth in claim 8 of said patent No. 538,809, claims 1, 2 and 3, of patent No. 691,332 and claims 7 and 9, of patent No. 721,644?

A. Yes.

Q. 4. Have you read the deposition of complainant's expert witness, John H. McElroy, taken in this suit, and have you examined the tie plate referred to and identified in said testimony as "Complainant's Exhibit No. 15, Defendants' Infringing Tie Plate."

A. Yes.

Mr. Reed: Defendants' counsel offer in evidence the specifications and drawings of the United States Letters Patent No. 66,437, granted July 2, 1867, to J. E. Wootten, for Railroad Chair, and the same is marked Defendants' Exhibit S.

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant, incompetent and immaterial, and also specially because it is for a patent for "An Improved Railway Chair" and not for a tie plate.

Mr. Reed: Defendants' counsel offers in evidence the specification and drawings of United States Letters Patent No. 93,875, granted August 17, 1869, to J. Gregory, for railway chair and sleeper,
512 and the same is marked Defendants' Exhibit S^1.

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and specially because it relates to an "Improved Railway Chair and Sleeper" and not to a tie plate.

Mr. Reed: Defendants' counsel offers in evidence the specification and drawings of United States Letters Patent No. 124,856, granted March 19, 1872, to Clinton Roosevelt, for splice pieces for railway rails, and the same is marked Defendants' Exhibit S^2.

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant, incompetent and immaterial,

and specially, because it is for an "Improvement in Splice-Pieces for Railway-Rails," and not for a tie plate.

Mr. Reed: Defendants' counsel offers in evidence the specification and drawings of United States Letters Patent No. 203,570, granted May 14, 1878, to I. Wells, for railway chair, and the same is marked Defendants' Exhibit S[3].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and, specially, because it purports to be for an improvement "in Railway-Chairs," and not for a tie plate; and, further objects to the same because the patent is not adapted for, nor suggestive of, use as a tie plate.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 249,407, granted November 8, 1881, to D. Servis, for wear plate for railroad ties, and the same is marked Defendants' Exhibit S[4].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence Reissue Patent No. 10,302, granted April 3, 1883, to D. Servis, for wear plates for railroad ties, and the same is marked Defendants' Exhibit S[5].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 280,030, granted June 26, 1883, to W. F. Gould, for railroad rail cushion and joint, and the same is marked Defendants' Exhibit S[6].

513 Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as incompetent, irrelevant and immaterial.

Mr. Reed: Defendants' solicitors offer in evidence the specification and drawings of United States Letters Patent No. 294,816, granted March 11, 1884, to D. Servis, for wear plates for railroad ties, and the same is marked Defendants' Exhibit S[7].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 313,067, granted March 3, 1885, to C. Fisher, for rail joint, and the same is marked Defendants' Exhibit S[8].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and, specially, because it is for alleged improvements in "Rail-Joints" and not for tie plates, or adapted to be used as a tie plate.

Mr. Reed: Defendants' counsel offer in evidence the specifications and drawings of United States Letters Patent No. 329,867, granted November 3, 1885, to A. M. Trude, for railroad track fastening, and the same is marked Defendants' Exhibit S[9].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification

and drawings of United States Letters Patent No. 360,673, granted April 5, 1887, to C. Fisher, for rail joint, and the same is marked Defendants' Exhibit S[10].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and also because it is for alleged improvements in "Rail-Joints" and not for a tie plate, and is not adapted to be used as a tie plate.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 379,210, granted March 13, 1888, to J. W. Currier, for wear plate, and the same is marked Defendants' Exhibit S[11].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 387,399, granted August 21, 1888, to E. H. Ashcroft for construction of rail-
514 roads, and the same is marked Defendants' Exhibit S[12].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and, specially, because purporting to be for improvement in "Railroad-Chairs" and not for a tie plate, and is not adapted to be used as a tie plate.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 421,678, granted February 18, 1890, to F. A. Davies, for wear plate, for railroad ties, and the same is marked Defendants' Exhibit S[13].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 426,530, granted April 29, 1890, to W. Goldie, for railroad rail chair, and the same is marked Defendants' Exhibit S[14].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as incompetent, irrelevant and immaterial and also, specially, because purporting to be an improvement in "Railroad Rail-Chairs" and not for a tie plate.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 457,584, granted August 11, 1891, to W. Goldie, for railroad tie plate, and the same is marked Defendants' Exhibit S[15].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 457,585, granted August 11, 1891, to W. Goldie, for railroad rail brace, and the same is marked Defendants' Exhibit S[16].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and, specially, because purporting to be for an improvement in "Railroad Rail-Braces" and not for a tie plate, and is not adapted to be used as a tie plate.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 462,357, granted November 3, 1891, to W. Kennish, for protector for the ends of beams, and the same is marked Defendants' Exhibit S[17].

Mr. Brown: Complainant's solicitor objects to the patent
515 exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and, specially, because purporting to be for an improvement in "Protectors for Ends of Beams" set in the walls of masonry of buildings and is not suggestive of nor capable of being used as a tie plate, and further, because it does not relate to the art of tie plates.

Mr. Reed: Defendants' counsel offers in evidence the specification and drawings of United States Letters Patent No. 462,399, granted November 3, 1891, to P. C. Dockstader, for lock rail joint, and the same is marked Defendants' Exhibit S[18].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as incompetent, irrelevant and immaterial, and, specially, because purporting to be for improvement in "Lock-Rail Joints or Chairs" and is not for a tie plate, and because it is not adapted to be used as a tie plate.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawing of United States Letters Patent No. 465,492, granted December 22, 1891, to F. W. Parsons for railway chair, and the same is marked Defendants' Exhibit S[19].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawing of United States Letters Patent No. 469,386, granted February 23, 1892, to C. H. Dunham, deceased, for railroad tie plate, and the same is marked Defendants' Exhibit S[19].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 474,129, granted May 3, 1892, to F. H. Heath, for rail joint, and the same is marked Defendants' Exhibit S[20].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and, specially because purporting to be for an improvement in "Rail-Joints" and not for a tie plate, and because it is not adapted to be used as a tie plate.

Mr. Reed: Defendant's counsel offer in evidence the specification and drawings of United States Letters Patent No. 481,171, granted August 23, 1892, to U. H. Hane, for railroad joint, and the same is marked Defendants' Exhibit S[21].

516 Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and, specially, because purporting to be for an improvement in a "Railroad-Joint" and not for a tie plate, and because it is not adapted to be used as a tie plate.

Mr. Reed: Defendants' counsel offer in evidence the specification

and drawings of United States Letters Patent No. 485,030, granted October 25, 1892, to W. Goldie, for tie plate, and the same is marked Defendants' Exhibit S^{22}.

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 488,662, granted December 27, 1892, to B. Reece for wear plate for railway ties, and the same is marked Defendants' Exhibit S^{23}.

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 492,528, granted February 28, 1893, to J. Churchward for wear plate, and the same is marked Defendants' Exhibit S^{24}.

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 494,692, granted April 4, 1893, to B. Reece, for method of making railroad tie plates, and the same is marked Defendants' Exhibit S^{25}.

Mr. Brown: Solicitor for complainant objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 495,807 granted April 18, 1893, to W. W. Holmes, for railroad tie plate, and the same is marked Defendants' Exhibit S^{26}.

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 506,963, granted October 17, 1893, to W. W. Worthington, for method of making railroad tie plates, and the same is marked Defendants' Exhibit S^{27}.

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

517 Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 508,086, granted November 7, 1893, to J. Churchward for wear plate, and the same is marked Defendants' Exhibit S^{28}.

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 514,465, granted February 13, 1894, to W. W. Holmes, for railway tie plate, and the same is marked Defendants Exhibit S^{29}.

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 514,466 granted February 13, 1894, to W. W. Holmes, for railway tie plates and the same is marked Defendants' Exhibit S^{30}.

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 514,467, granted February 13, 1894, to W. W. Holmes for railway tie plate and method of making same, as Defendants' Exhibit S[31].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 514,828 granted February 13, 1894, to J. A. Harris, for tie plate for railway tracks, and the same is marked Defendants' Exhibit S[32].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 522,867, granted July 10, 1894, to W. H. Wilson, for railroad tie plate, and the same is marked Defendants' Exhibit S[33].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 524,868, granted August 21, 1894, to D. Servis, for railway tie plate, and the same is marked Defendants' Exhibit S[34]..

518 Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawing of United States Letters Patent No. 529,854 granted November 27, 1894, to S. F. Clark, for tie plate, and the same is marked Defendants' Exhibit S[35].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 531,637 granted December 4, 1894, to T. R. Gabel, for combined tie plate and rail brace, and the same is marked Defendants' Exhibit S[36].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence, as irrelevant and immaterial, and also incompetent as being for a "Rail-Brace."

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 530,738, granted December 11, 1894, to B. Wolhaupter, for railway tie plate, and the same is marked Defendants' Exhibit S[37].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 531,637 granted January 1, 1895, to R. Morrell, for tie or wear plate, and the same is marked Defendants' Exhibit S[38].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 535,963 granted March 19, 1895, to J. T. Stewart for railway tie plate and the same is marked Defendants' Exhibit S[39].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 538,808, granted May 7, 1895, to B. Wolhaupter, for tie plate, and the same is marked Defendants' Exhibit S[40].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 538,817
519 granted May 7, 1895, to W. H. Chamberlin, for tie plate, and the same is marked Defendants' Exhibit S[41].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of the United States Letters Patent No. 540,356, granted June 4, 1895, to W. Goldie, for tie plate, and the same is marked Defendants' Exhibit S[42].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 541,984 granted July 2, 1895, to B. Reece, for railroad tie plate, and the same is marked Defendants' Exhibit S[43].

Mr. Brown: Complainant's solicitor objects to the patent exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 542,352 granted July 9, 1895, to C. F. Quincy, for combined tie plate and rail brace, and the same is marked Defendants' Exhibit S[44].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and also because purporting to be for a "Rail-Brace."

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 542,787 granted July 16, 1895, to B. Wolhaupter, for tie plate, and the same is marked Defendants' Exhibit S[45].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 566,828 granted September 1, 1896, to T. S. Weed, for tie guard or plate, and the same is marked Defendants' Exhibit S[46].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 573,543 granted

December 22, 1896, to M. Sellers, for tie plate, and the same is marked Defendants' Exhibit S[47].

520 Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 574,773, granted January 5, 1897, to H. W. Avery, for railway tie plate and the same is marked Defendants' Exhibit S[48].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 579,509 granted March 23, 1897, to B. Wolhaupter, for railway tie plate and the same is marked Defendants' Exhibit S[49].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 584,248 granted June 8, 1897, to I. F. Tillinghast, for track fastening, and the same is marked Defendants' Exhibit S[50].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and also, specially, because it purports to be for improvements in "Track-Fastening," including a rail-clamp.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 584,603, granted June 15, 1897, to J. T. Richards for railroad chair or tie plate, and the same is marked Defendants' Exhibit S[51].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial, and also because it purports to be for alleged improvements in "Railroad Chairs."

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 592,865 granted November 2, 1897, to J. W. Cloud, for rail joint, and the same is marked Defendants' Exhibit S[52].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and also because it is for alleged improvements in "Rail-Joints" and not tie plates.

521 Mr. Reed: Defendants' Counsel offer in evidence the specification and drawings of United States Letters Patent No. 603,563, granted May 3, 1898, to A. B. B. Harris for gauge adjusting tie plate, and the same is marked Defendants' Exhibit S[53].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 610,179 granted September 6, 1898, to W. Goldie, for tie plate, and the same is marked Defendants' Exhibit S[54].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 622,935 granted April 11, 1899, to A. Morrison, for tie plate, and the same is marked Defendants' Exhibit S[55].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 631,039 granted August 15, 1899, to W. Goldie, for tie plate, and the same is marked Defendants' Exhibit S[56].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 631,873 granted August 29, 1899, to G. K. Kinney and S. L. Trueblood, for railway tie plates, and the same is marked Defendants' Exhibit S[57].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 636,607 granted November 7, 1899, to B. Wolhaupter, for railway tie plate and the same is marked Defendants' Exhibit S[58].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the speci-
522 fication and drawings of United States Letters Patent No. 636,982 granted November 14, 1899, to W. C. Hanna, Jr., for beam shoe, and the same is marked Defendants' Exhibit S[59].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence, as incompetent, irrelevant and immaterial; also because purporting to be for improvements in "Beam-Shoes" of that class of devices which are used to sustain the ends of beams or timbers, supported in a chimney or other wall, and not for a tie plate, and because being in an art entirely foreign to, and not analogous to, the art of tie plates; and is also objected to as showing a device not adapted to be used as a tie plate.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 649,629 granted May 15, 1900, to R. B. Charlton, for railway tie plate, and the same is marked Defendants' Exhibit S[60].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 662,850 granted November 27, 1900, to H. W. Avery, for tie plate, and the same is marked Defendants' Exhibit S[61].

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 684,466 granted

October 15, 1901, to J. M. Sellers, for tie plate, and the same is marked Defendants' Exhibit S^{62}.

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 691,037 granted January 14, 1902, to B. Wolhaupter, for rail joint, and the same is marked Defendants' Exhibit S^{63}.

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and, specially, is objected to as being for an alleged improvement in "Rail-Joint" and not tie plates.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 691,317
523 granted January 14, 1902, to W. S. Jones for railway tie plate and the same is marked Defendants' Exhibit S^{64}.

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence, as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 696,964 granted April 8, 1902, to H. H. Hart, for tie plate, and the same is marked Defendants' Exhibit S^{65}.

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the specification and drawings of United States Letters Patent No. 700,714 granted May 20, 1902, to F. C. Anderson, for railway rail joint and the same is marked Defendants' Exhibit S^{66}.

Mr. Brown: Complainant's solicitor objects to the patent Exhibit just offered in evidence, as incompetent, irrelevant and immaterial, and is also, specially, objected to because being for an alleged improvement in "Railway Rail-Joints" and not for a tie plate.

Complainant's solicitor also objects to Defendants' Exhibits Wolhaupter Patent No. 891,037, issued January 14, 1902, Jones Patent No. 891,317, issued January 14, 1902, Hart Patent No. 896,964 issued April 8, 1902, and Anderson Patent No. 700,714 issued May 20, 1902, as incompetent because not of prior date to the invention shown, described and claimed in Complainant's Exhibit No. 1, Wolhaupter Patent in suit No. 538,809, granted May 7, 1895, and because not of prior date to the invention shown, described and claimed in Complainant's Exhibit No. 2, Wolhaupter Patent in suit No. 691,332, granted January 14, 1902.

Complainant's solicitor also objects to Defendants' Exhibits,
Wolhaupter patent #538,808, May 7, 1895
Chamberlin patent #538,818, May 7, 1895
Goldie patent #538,356, June 4, 1895
Reece patent #541,894, July 2, 1895
Quincy patent #542,352, July 9, 1895
Wolhaupter patent #542,784, July 16, 1895
Weed patent #566,828, September 1, 1896
Sellers patent #573,543, December 22, 1896

Avery patent #574,773, January 5, 1897
Wolhaupter patent #579,509, March 23, 1897
524 Tillinghast patent #584,248, June 8, 1897
Richards patent #584,603, June 15, 1897
Cloud patent #592,865, November 2, 1897
Harris patent #603,563, May 3, 1898
Goldie patent #610,179, September 6, 1898
Morrison patent #622,965, April 11, 1899
Goldie patent #631,039, August 15, 1899
Kinney patent #631,873, August 29, 1899
Wolhaupter patent #636,607, November 7, 1899
Hanna patent #636,982, November 14, 1899
Carleton patent #649,629, May 15, 1900
Avery patent #662,850, November 27, 1900 and
Sellers patent #684,466, October 15, 1901

as incompetent because not of prior date to the invention shown, described and claimed in Complainant's Exhibit No. 1 Wolhaupter patent in suit No. 538,809, granted May 7, 1895.

Mr. Reed: The same being the Letters Patent designated and referred to in the answer herein.

Q. 5. Will you please compare the constructions which such of the above letters patent designated and offered in evidence on behalf of defendants prior to the date of Wolhaupter patent No. 538,809, patented May 7, 1895, Exhibit A, to the bill of complaint, and Complainant's Exhibit No. 1, disclose, with claim 8 of the said Wolhaupter Patent last referred to and state what if any novelty you find disclosed in this claim No. 8, of said Wolhaupter patent No. 538,809, in view of these prior constructions?

A. Before undertaking the comparison called for by this question I will first briefly describe the construction of tie plate disclosed in the first Wolhaupter patent in suit No. 538,809, and claimed in claim 8, thereof.

A tie plate is simply a metallic plate placed under a railroad rail upon the tie which supports the rail, to take the wear which the rail offers to the tie, and to better distribute the weight of the rolling stock passing over the rail, upon the surface of the tie. Such tie plates have sometimes been called "wear-plates" and sometimes "railroad rail chairs." They are closely related, also, to the devices known as "rail joints," by which the meeting ends of railroad rails are securely fastened together. In fact, most rail joints include in their construction a wear plate which goes between the tie and the rail, and serves in effect as a tie plate. In fact the same device may be used either as an ordinary tie plate, or as a part of the joint construction of the rails, as illustrated, for example, by the
525 "Combination joint and Intermediate" tie plate shown on Fig. 18 of Complainant's small catalogue "Complainant's Exhibit No. 23 'track.'"

It goes without saying that such wear-plate or tie plate devices, in their very nature, are capable of almost endless variations in the details of their construction. One of these variations is shown in the

first Wolhaupter patent in suit, now under consideration. The device which this Wolhaupter patent shows and describes, is a fluted or corrugated plate with sharpened ribs on its under side to stick down into the wood of the tie. It is exactly exemplified by the aluminum model which has been introduced in evidence heretofore as "Defendants' Exhibit O" and which I have myself tagged with a separate tag bearing the label "Device of first Wolhaupter Patent in suit No. 538,809, dated May 7, 1895."

Looking at this aluminum model, it will at once appear that the corrugations and ribs of this plate are intended to run lengthwise of the tie, parallel to the grain of the wood, and transversely to the length of the rail. A seat for the rail is provided on the tops or summits of the corrugations on the upper side of the plate between shoulders which are formed by upstanding flanges on the ends of these tops or summits of the corrugations.

It will also be noted that the ends of this plate disclosed in the first Wolhaupter patent, are cut off obliquely, with the result that the successive ribs on the under side of the plate terminate at different points longitudinally of the tie. The object of this construction is to enable the tie plate to be more readily adjusted along the tie, in case the thrust on the rail has forced the tie plate over so that the track is out of gauge. In that event, the patent contemplates that the tie plate will be lifted and moved laterally on the tie to the extent of the distance between the sharpened ribs on the under side of the plate, and that the plate will then be forced into the tie again with all of its ribs but one engaging the grooves previously formed by the ribs of the plate when originally forced into the tie, the other rib forming a new groove for itself as the tie plate is re-seated in the wood. This re-engagement of the ribs with the old grooves, but with the ribs set over one space, will naturally involve a longitudinal movement or adjustment of the tie plate on the tie to an extent just equal to the obliquity of the end of the plate measured between two adjacent ribs and this longitudinal movement will result
526 in a lateral movement of the rail tending to restore the gauge of the track.

The specification of this first Wolhaupter patent in suit is principally taken up with the discussion of the necessity for and the advantages of this longitudinal adjustability of the tie plate on the tie, which is brought about by the providing ribs on the under side of the plate running longitudinally of the tie, transversely to the rail, and by cutting off the ends of these ribs and of the plate obliquely, as described. The specification, however, also refers to the peculiar corrugated shaping of the plate as producing, so it is alleged, a stronger plate for the same weight, one which will tend to exclude moisture from the wood under the plate and which will provide for the draining of the plate and for the working out of sand, cinders, etc. Claim 8 of the patent, to which your question directs attention, on its face simply involves this latter feature. It does not in terms mention the oblique construction of the plate involved in its adjustability along the tie. The claim reads:

"8. A railway tie plate formed on the under side with devices

more or less sharpened adapted to penetrate and engage the tie and on its upper side with a series of flanges on which the rail rests, substantially as described."

I say that this claim does not in terms refer to the oblique construction involving the adjustability of the plate along the tie, but I note the following paragraph at the close of the specifications of the patent, which might be taken to cover all of the claims of the patent with this feature in addition to the particular characteristics which the claim mentions in terms. Such paragraph reads:

"In all of the above named variations the principle employed is the same and each would embody the essential idea of my invention which consists in providing a plate on its under side with a series of stepped flanges or projections, that is to say, flanges or projections arranged on a diagonal line with respect to the rail flange."

If the court should find that this provision of the specification applies to claim 8 of the patent, as well as to the other claims, then the railway tie plate here called for must be one in which the "devices more or less sharpened and adapted to penetrate and engage the tie," on the under side of the plate, take the form of the series of stepped flanges or projections, that is to say, flanges or projections arranged on a diagonal line with respect to the rail flange, as the drawing and the aluminum model, "Defendants' Exhibit O,"
527 so clearly show. Otherwise a square-ended plate, devoid of this peculiar feature of adjustability along the tie, might equally well be such a plate as claim 8 defines, and in comparing this claim with the prior art I shall take this view of the construction called for.

In other words, in the ensuing comparison of the prior art, I shall consider claim 8 simply with respect to the structural limitations which are expressed in words in the claim, and shall ignore its possibly limitation to the feature of rendering the tie plate especially adjustable along the tie by the stepped or oblique arrangement of the ends of its bottom flanges, as well as its possible limitation to a construction having rail engaging shoulders or a single rail-engaging shoulder on its upper surface, it being noted that this feature also is omitted in the language of the claim.

The directly expressed characteristics of claim 8 are simply that it shall be formed with, first, devices on its under side "more or less sharpened adapted to penetrate and engage the tie," and second, a series of flanges on its upper side "on which the rail rests." With regard to the first of these characteristics or limitations, it is observed that the expression "more or less sharpened" is of the vaguest possible nature, and does not limit the construction in any definite way. It is hard to conceive of any kind of a projection provided on the under side of a tie plate to enter the wood of the tie, which could not be said to be "more or less sharpened," especially in view of the statement of the specification with regard to this feature, that the sharpened construction is merely preferable. I refer to the statement contained in lines 83-87 of page 1, of the specification of the patent, which read:

"The flanges on the under side are preferably shaped with com-

paratively sharp edged c^6 so that they will readily enter and separate the grain of the tie."

Any structural characteristic which a patentee starts out by saying is merely a preferable form, and finishes by describing as existent to a "more or less" extent merely, certainly cannot be looked upon as any very material feature of the construction in the patentee's own view of it.

And with regard to both of the characteristics or limitations above mentioned, to-wit, the "devices more or less sharpened adapted to penetrate or engage the tie," on the one hand, and the "series of flanges on which the rail rests" on the other, it is further ob-
528 served that there is no necessary relationship between them. They do not interact or co-operate in any way to produce any unitary or new result which is anything more than the bringing together of their separate functions, contributed by each without respect to the presence or absence of the other. Whatever usefulness results from the presence on the under side of the plate of devices more or less sharpened to penetrate and engage the tie, would equally result if the rail, instead of being seated on a series of flanges, were seated on a continuous flat surface, such as an ordinary flat topped tie plate. On the other hand whatever advantages result from forming the rail-seat of the tie plate of a series of flanges with intervening depressions or grooves, would equally result if the under side of the tie plate were left plain or without any devices adapted to penetrate and engage the tie. There is no combination, in a patent sense, between these two features of the bottom surface formation and the top surface formation of the tie plate thus defined by claim 8.

Certainly at least this is true if the language of the claim be taken at its face value and as broadly as its terminology indicates. Of course, if the court should interpret the claim as limited to the essentially corrugated construction which a cross section of the body portion of the tie plate illustrated in the drawing of this patent shows (Fig. 2), and in which the tie penetrating devices on the under side of the plate and the rail-supporting flanges on the upper side of the plate are simply the upper and lower angles of the corrugations, each existing as a part and result of the corrugated formation, there might be said to be a structural relation between these features, although there still would not be any functional relation between them. But this view of the claim would, of course, exclude from its scope every other form of tie plate structure than that in which tie-engaging flanges on the under side of the plate and rail-supporting flanges on the upper side of the plate would alternate as necessary incidents of the undulatory formation or corrugation of the plate body—as the necessary angular ridges above and below which the corrugation of the plate body would inevitably entail. Such a view of the claim, for example, would necessarily exclude from its purview such a structure as that shown by "Complainant's Exhibit No. 15, Defendants' Infringing Tie Plate," and, for the purposes of the present comparison, the possibility of this view of the claim may therefore be ignored.

Considering the language of the claim broadly and as ex-
529 pressed on its face, there is, I have said, no necessary relation, structural or functional, between the features of the top and bottom formation of the plate which the claim calls for, i. e., "devices more or less sharpened adapted to penetrate and engage the tie," on the under side of the plate, and "a series of flanges on which the rail rests" on the upper side of the plate. So that these features, if separately met with in the prior art, will be just as pertinent as though met with in the same structure. As a matter of fact, however, these features are shown in the prior art, not only separately, but together and in the same relation, substantially, as in the Wolhaupter patent itself.

Prior Art With Respect to First Wolhaupter Patent in Suit, No. 538,809.

The large number of patents of the prior art which have just been introduced in evidence, amply illustrate my statement that such devices as tie plates may be made up in an almost endless variety of shapes and styles. It would serve no good purpose, however, for me to discuss in detail each of the many different constructions which these patents disclose. I shall simply call attention to such of these constructions as are most pertinent in connection with the comparison with the Wolhaupter tie plate of the patent in suit, which the question calls for. And first I would call attention to the device of the Wells patent No. 203,570, of May 14, 1878.

Wells Patent 203,570.

This patent shows a device which is called an "improvement in railway chairs." It is a metal plate designed to be placed beneath the rails and between the rails and ties of a railroad. Its construction is so clearly shown in the pictures of the patent drawing that it hardly need be described in detail. It is sufficient to point out that the upper surface of the plate is provided with lateral flanges or shoulders D for confining the rail by engaging the edges of the base of the rail, and that longitudinal grooves or channels are formed in the upper surface of the plate between the shoulders D for the double purpose of rendering the structure lighter and of serving to receive sand or grit which otherwise might remain, as it is assumed, between the plate and rail and interfere with the perfect bearing and support of the rail. I say that this is assumed because I under-
530 stand that this fact is very conjectural, and that the usefulness of such grooves in this respect is disputed. I note, for instance, that defendants' witness Mr. Storey, a railway engineer of large experience, denies that the grooves or channels of such tie plates as have their upper or rail supporting surfaces grooved or channeled, serve any useful purpose so far as the carrying off of sand or grit or moisture is concerned, and avers that they have the sole advantage of rendering the plate lighter, without objectionably reducing its strength.

But, however, this may be, the fact remains that the upper surface of the plate or chair of this Wells patent is grooved or channeled for the same express purposes as those which the Wolhaupter patent in suit points out, i. e., both for the purpose of rendering the plate lighter, while retaining its substantial strength, and for the purpose of carrying off sand and grit (and necessarily, of course, moisture), which otherwise might remain between the plate and rail. The specification of the Wells patent is explicit in these respects, and reads as follows, at the top of the second column of page 1:

"Said bearings F, F', are thus separated from the central bearing C, by grooves B, B, which also serve as receptacles for sand or grit that may enter between the chair and rail, and thus insure a firm bearing of the rail on the chair bearings at all times.

"The grooves B, B, also enable the chair to be made much lighter than the ordinary chair, and yet possess an equal amount of strength, owing to the fact that the rail is fully supported at all points where the chair is subjected to strain—namely, at its center and sides."

With regard to this matter of the complete supporting of the rail, thus referred to in the Wells specification, I would particularly call attention to the fact that the arrangement of supporting surfaces here provided, is precisely that which is followed in "Complainant's Exhibit No. 15, Defendants' Infringing Tie Plate." In the Wolhaupter patent in suit, No. 538,809, it will be remembered, the supporting flanges for the rail are shown as extending longitudinally of the tie and directly across or transversely of the rail. There is no continuous longitudinal support for the rail provided by this Wolhaupter construction, but on the contrary the rail is supported at separate points longitudinally, and the support at each point extends clear across the rail, from side to side. In this Wells patent, on the other hand, a continuous longitudinal support for the rail to
531 the full extent of the length of the plate is provided, and the grooves B, B, which interrupt this support are longitudinal grooves, and not transverse grooves, so that the rail is in effect carried on three bearing surfaces one at each edge, and one in the middle. This rail supporting construction of the Wells patent, and not rail supporting the construction of the Wolhaupter patent, is what has been adopted in the design of "Complainant's Exhibit No. 15, Defendants' Infringing Plate." Indeed, the rail supporting surface of this exhibit plate, defendants' construction is precisely that of the Wells patent.

So much for the upper surface conformation of the Wells device. On its under surface, it will be noted that the device is provided with a longitudinal rib E, which is sunk into the wood of the tie and serves to prevent displacement of the plate longitudinally of the tie or in a direction to permit any variation in the gauge of the track. This rib differs from the under flanges of the tie plate of the Wolhaupter patent in suit particularly in that it thus extends parallel with the rail and transversely of the tie, instead of extending parallel with the tie and transversely of the rail, as the Wolhaupter patent shows, and again it will be noted that in designing "Complainant's Exhibit No. 15, Defendants' Infringing Tie Plate,"

it is the Wells construction and not the Wolhaupter construction which has been adopted in this particular. Defendants' Construction in this respect differs from Wells simply in employing two longitudinal ribs, placed under the bearing portions of the plate which support the edges of the rail base, instead of merely using a single longitudinal rib placed under the central bearing for the rib, as Wells show it. And even in respect to this difference, it will presently appear that Defendants' construction simply follows other devices of the prior art, and not the Wolhaupter device of the patent in suit, in which as pointed out, the tie engaging flanges are all transverse to the rail, and do not in any instance extend beneath the rail supporting flanges but are located instead, midway between these flanges.

The claim of the Wells patent is particularly noticeable in that it constitutes almost a perfect description, so far as it goes, of Defendants' construction, as shown by Complainant's Exhibit 15. Thus it reads:

"A railway chair constructed with vertical sides, which extend above and constitute side flanges, and provided on its upper surface with a central bearing C, bearings F, F', and grooves B, B, and having a lower depending flange E, substantially as set forth."

532 Except that defendants' tie plate has but a single rail-abutting shoulder or "side flange," a fact which admittedly makes no difference whatever in any view of this comparison, it will be observed that this claim of the Wells patent reads verbatim et literatim upon defendants' structure.

Whereupon an adjournment was taken to December 4, 1909, at 10 o'clock a. m.

December 4, 1909—10 o'clock a. m.

Met pursuant to adjournment,
Present as before.

HENRY W. CARTER resumed the stand and continued his testimony as follows:

And the point of this identity of the claim of the Wells patent with defendants' tie plate structure is, of course, that if claim 8 of the patent in suit be regarded as describing defendants' tie plate construction, it must be regarded equally as descriptive of this prior construction of the Wells patent and anticipated by it.

Moreover the language of claim 8 of Wolhaupter patent 538,809, now under consideration, reads substantially upon the Wells device. Wells shows a railway tie plate formed on the under side with devices, to wit, its longitudinal under rib, adapted to penetrate and engage the tie, and formed on its upper side with a series of raised bearing surfaces upon which the rail rests. And if the term "flanges," as employed in this claim, is applicable to the raised bearing surface of "Complainant's Exhibit 15, Defendants' Infringing Tie Plate," it is obviously equally applicable to and descriptive of these raised bearing surfaces of the Wells patent. The under rib

on the Wells patent is not sharpened so far as the Wells drawing shows, but a sharpened rib would be perfectly consistent with the Wells construction and with the claim of the Wells patent—just as consistent as the square edged rib which the draughtsman happens to have illustrated. And, as will presently be shown, sharpened ribs, as well as square edged ribs, were commonly employed as the tie engaging devices of the tie plate of the prior art. Moreover, the vagueness and indefiniteness of the expression "more or less sharpened," taken in connection with the statement of the specification of the Wolhaupter patent that the sharpening is at most merely
533 preferable, makes this distinction an immaterial one, as has already been pointed out.

Nor, in coming to this conclusion, have I overlooked the fact that the device of this Wells patent is described as a "railway chair," "adapted to support the joints of railroad rails and bridge or span two or more sleepers at such point." This fact does not in the least alter its essential construction, which is that of a tie plate, i. e., a metal plate adapted to be placed on the tie beneath the rail for the purpose of protecting the tie from the wear of the rail and of better holding the rail in proper alignment on the tie or, in other words, of holding the track in gauge. While it is true that the device is shown and described as spanning or extending over several ties beneath the joint of the rail, it will be apparent that this capacity does not result by reason of any peculiarity in its construction, but merely because of the length of the plate. The same device, *it* cut off to a shorter length, like an ordinary tie plate, would respond in every respect to the claim of the Wells patent and would, in fact, be the same device, mechanically, as before, although it would then be a mere tie plate and could only support the joint in case the rail was jointed over the tie.

And if the objection should be raised that the device of the Wells patent is lightened in that it does not provide any spike holes for the railroad spikes, the answer is that this absence of spike holes is obviously immaterial for three reasons. In the first place there is no mention in the claim of the patent in suit of any spike holes in the plate which the claim defines or calls for, the reason for this being apparent—that the provision of spike holes in any such railroad plate, joint or chair, is a matter of choice with the mechanic, not involving in any way the special construction or design of the plate. Second, it is common in this art, and has been from a very early date, to make tie plates with or without spike holes, just as desired. Third, there is nothing whatever about the Wells design of plate which would be interfered with by the provision of spike holes, or which would afford any reason why spike holes should not be provided, if wanted. It would simply require that the plate be made wide enough to give room for spike holes in its outer edges.

In order to show graphically that the essential construction of the Wells plate remains the same, whether made long enough to extend over two or more ties to support a rail joint between the ties, or made shorter so as to simply cover a single tie, after the manner

of the ordinary tie plate, I here produce two aluminum exhib-
534 its exemplifying the construction illustrated, described and claimed in the Wells patent, but differing in length. The first of these exhibits, which I will ask the Examiner to mark Exhibit O⁵, shows the plate made long enough to span two or more ties, as the patent illustrates it. The second of these exhibits which I shall ask the Examiner to mark Exhibit O⁶, is a plate cast from the same pattern, but cut off to correspond with the length of an ordinary tie plate. In order to more completely identify these exhibits, I have also attached to them separate tags marked in the first case, or that of Exhibit O⁵, with the label "Prior art Device of Wells patent No. 203,570, dated May 14, 1878," on the one side, and with the label "Prior Art with respect to all three Wolhaupter Patents in suit," on the other side. And in the case of the second Exhibit, Exhibit O⁶, bearing on one side the label "Prior Art Device (shortened) of Wells patent No. 203,570, May 14, 1878," and on the other side the label "Prior Art with respect to all three Wolhaupter Patents in suit." These descriptive tags I have also signed with my in-tials, "H. W. C."

Servis Patent No. 249,407, of November 8, 1881.

Attention is called to this patent for the reason that it is an early example of wear plate or tie plate purely, having no relation, so far as the patent sets forth, to the joining of the rail. Also for the reason that the patent illustrates my statement that it was common in this art to provide the same plate either with or without spike holes, as desired. Thus looking at Figs. 1, 2 and 4, of the drawing of this Servis patent, it will be observed that the tie plate illustrated is not provided with spike holes and that the spikes are driven at the sides of the plate. While in Fig. 3, it will be noted that the plate is formed with spike hole F, through which the spikes may be driven. With regard to this construction the patent states, near the bottom of the first column:

"Plates C, are designated to be made of such width that they will pass between the spikes E, E, that secure the bases of the rail to the ties or sleepers; or the plate C, can be made wider, as shown in Fig. 3, in which case slots or notches F can be formed in said plate C, as shown in Fig. 3, to receive the spikes E."

Attention is drawn to this Servis patent No. 249,407, of November 8, 1881, also, for the reason that this patentee, Servis, appears to have been one of the pioneers in this art, and to have taken out
a number of patents on tie plates at various times up to com-
535 paratively recent years. Other forms of Servis tie plate are shown, for example, in patent No. 294,816, of March 11, 1884; and No. 524,868, of August 21, 1894. It appears also from the testimony in this case in which the Servis plate is frequently mentioned, that tie plates patented by Servis, or at least bearing his name, have gone widely into use. In fact complainant's publication "Track," "Complainant's Exhibit 23" advertises Servis tie plates on pages 12 and 13.

Gould Patent No. 280,030, of June 26, 1883.

This patent shows what is in effect a tie plate, as will be evident from a glance at Fig. 2, which shows one form of the device, upside down. I have already stated that sharpened ribs were common in this art as applied to the bottom of a tie plate to penetrate and engage the wood of the tie. This patent illustrates such sharpened ribs as *c, c,* a single line of such ribs being shown in plate illustrated in Fig. 2, and two such ribs in the plate illustrated in Figs. 4 and 5.

The Gould plate thus illustrated is particularly designed to receive a rail which is specially rolled with one or more sharpened ribs on the under side of its base, and to this end is channeled, at *b,* to provide a groove or grooves into which the ribs on the rail may enter. The patent also suggests the use of a cushioning layer of rubber or the like, beneath the rail. Obviously, however, there is no necessary requirement either that such cushion be used, or that a ribbed rail be used, in order to render the employment of this Gould tie plate practicable and advantageous. The plate itself, exactly as illustrated in Fig. 2, might obviously be placed under an ordinary flat bottomed rail, without any cushion, and would serve very efficiently as an ordinary tie plate, in that case. Its mechanical structure would not have to be changed at all.

This Gould patent also illustrates how indefinite is the line of division between tie plates and so called rail joints. For it is obvious that the construction which Gould shows, describes and claims, although it is specially described and illustrated (in Fig. 6), as applicable to the joining of rails, is just as applicable for use on ties where the rails are not jointed, there being nothing whatever about the construction which in any way confines it to any particular location along the length of the rail. There is not even the element of difference in length involved in this case, as there may be
536 contended to be in the case of the Wells device, since this Gould plate is not intended to extend over two or more ties, but to be confined to a single tie in every case, like an ordinary tie plate. If it is used as a rail joint, the jointing of the rails must occur directly above the tie on which the plate is placed.

As compared with claim 8 of the Wolhaupter patent under consideration, it will at once be observed that the under surface of this Gould plate responds precisely to the wording of the claim:

"A railway tie plate formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie."

In fact these devices of the Gould patent take precisely the same form as the corresponding tie engaging devices of "Complainant's Exhibit 15, Defendants' Infringing Tie Plate," which are charged to respond to this element of claim 8, by complainant's witnesses.

Moreover, the upper surface of the Gould plate, especially in the form illustrated in Fig. 5, responds just as accurately to the expression of the claim "formed * * * on its upper surface with a series of flanges on which the rail rests," as defendants' plate construction does, except that the grooves or channels in the upper surface of the Gould plate are narrower, and the bearing surfaces for

the rail correspondingly wider. It will also be noted that this Gould plate has a shoulder *d* on the outer side of the plate, to engage the edge of the flange of the base of the rail and hold the track in gauge, although this fact is not material, so far as the language of claim 8, now under consideration, is concerned, there being no mention of this shoulder in the claim, as I have already pointed out. I refer to the presence of this shoulder in the Gould plate because it illustrates how early this feature of defendants' construction was employed in this art, exactly as defendant employs it.

Dockstader Patent No. 462,399, of November 3, 1891.

In the devices of the Wells and the Gould patents just referred to, the fact that they were described and illustrated in connection with the joining of the rails had nothing whatever to do with their construction, and left them as perfectly applicable for use at any other point along the rail, as at the joint.

537 The patent to Dockstader, No. 462,399, shows another form of rail joint which is especially designed and adapted for connecting the ends of the rails, and would not be practicable, probably, for use between their ends. Nevertheless, I have called attention to this Dockstader patent for the reason that it illustrates the fact, to which I have already called attention, that even such special rail joint almost invariably involves the essentials of a tie plate in their construction, and simply add to this whatever peculiarities may be necessary to render the device peculiarly useful for holding the meeting ends of rails firmly together.

The Dockstader device is designed to reach up around the base of the rail and engage the vertical flange and head of the rail so as to firmly support the meeting ends of the rail in alignment. The base plate of the device, however, has all of the characteristics of a tie plate. It is designed to be placed over the tie and beneath the rail, so as to protect the tie from the wear of the rail and distribute its weight and the weight of the rolling stock which passes over, more widely upon the tie. The under side of this plate, moreover, is provided with "devices" more or less sharpened adapted to penetrate and engage the tie," for the purpose of preventing the plate from moving with respect to the tie, and particularly for the purpose of keeping the track more securely in gauge. These devices may take a variety of shapes, such as are illustrated in Figs. 5, 6 and 7, for example, but they serve the same purpose in any case and operate most nearly like the tie engaging ribs of the defendants' tie plate.

Moreover, the upper surface of the Dockstader plate, upon which the rail rests, is cut away or grooves longitudinally of the rail, at b^2, so that the rail supporting surfaces on each side may be said to be "a series of flanges on which the rail rests" (to quote claim 8 of the Wolhaupter patent under consideration) in exactly the same sense that the longitudinal bearing surfaces of defendants' tie plate are claimed to be.

And while it is not definitely so stated in the specification of the Dockstader patent, the groove b^2 beneath the surface of the rail would serve the same purpose (assuming that any such purpose is actually

served in practice) of forming a space for sand, cinders, etc., to work out from beneath the rail, and a drainage space for water and moisture, which the Wolhaupter patent in suit sets forth as a function of the surface grooves or depressions in the plate of that patent.

538 It would also serve the purpose of lightening the plate, which is the other function of this feature of construction referred to in the patent in suit, and enlarged upon by complainant's expert witness, as a material feature of the patented construction.

In order to render the characteristics of this Dockstader construction more clear to the court, I have had made and here produce an aluminum model of the device as illustrated in Fig. 5, in particular, of the Dockstader patent, which model I will ask the Examiner to mark Exhibit O[7]. This model represents, with substantial accuracy, the plate or casting of the Dockstader rail joint. It does not include the wedge block, illustrated in Fig. 4, by which Dockstader proposes to wedge his rail into the device, or the locking key or wire illustrated in Fig. 10, used to hold the key in position, but otherwise it is a complete and substantially perfect exemplification of Dockstader's construction. And to more completely identify it I have attached to the model a tag bearing on one side the label "Prior Art Device of Dockstader patent No. 462,399, dated November 3, 1891," and on the other side the label "Prior Art with Respect to all three Wolhaupter Patents in suit." I have written my initials on this tag, furthermore, for identification.

Dunham Patent No. 469,386, February 23, 1892.

Particular attention is called to this patent for the reason that it shows, as one of the essentials of its construction, a corrugated tie plate, with the corrugations extending clear through the body of the plate (in the form shown in Figs. 1, 2 and 3) so as to form a series of tie supporting flanges on the upper side of the plate for the rail to rest on, and a series of parallel ribs or flanges constituting "devices more or less sharpened adapted to penetrate or engage the tie," just as in the Wolhaupter patent in suit. The tie plate of this Dunham patent, in fact, responds completely to the two stated characteristics of the plate defined by claim 8 of the Wolhaupter patent under consideration. That is to say, it is a railway tie plate formed on the under side with devices more or less sharpened adapted to penetrate or engage the tie, and on its upper side with a series of flanges on which the rail rests, substantially as the Wolhaupter patent sets forth.

The Dunham patent sets forth that the object of the corrugated construction of his plate was to make it lighter and stronger, just as was one of the objects of the Wolhaupter patent in suit, and it needs but a glance at the aluminum model which I here produce and will ask the Examiner to mark Exhibit O[8], to show that the

539 strength and lightness naturally follow from the corrugations of the plate. An inspection of this model will also make it plain that it possesses every characteristic of the tie plate set forth in claim 8 of the Wolhaupter patent, and possesses them because it is of substantially the same construction as the body portion of the Wolhaupter tie plate. That is to say, because it is substantially the

same thing, structurally, which the Wolhaupter patent illustrates and describes, if we leave out of consideration the oblique cutting off of the ends of the plate, and the provision of the rail abutting shoulders C^4 on the ends of the upper surface of the plate which are not directly mentioned in claim 8, and which, if considered as implied, necessarily exclude Defendants' tie plate construction.

Whereupon an adjournment was taken to December 6, 1909, at 10 o'clock A. M.

December 6, 1909—10 o'clock a. m.

Met pursuant to adjournment.
Present as before.

HENRY W. CARTER resumed the stand and continued his testimony as follows:

The specification of the Dunham patent says nothing about the penetration of the wood of the tie by the ribs of its corrugated under surface, and on the other hand does describe these corrugations as forming air spaces between the bottom of the plate and the tie, for preventing the retention of moisture there and the resulting tendency towards decay. But the fact remains, nevertheless, that the under ribs formed by the corrugations of the Dunham plate would inevitably sink into the wood of the tie, and "penetrate and engage the tie." It is a physical impossibility that this should be otherwise, especially with soft wood ties, such as tie plates were originally particularly designed to protect, and such as are coming more and more into use, as the harder woods become scarce. The immense weight on the locomotive drivers, as they pass over the rail must inevitably force the ribs of the Dunham plate into the wood, just as they will force the under ribs of "Complainant's Exhibit No. 15, Defendants' Infringing Tie Plate" into the wood, and just as they will force the under flanges of the Wolhaupter tie plate of patent No. 538,809, into the wood. The only difference can be a mere matter of de-
540 gree, dependent upon the proportions given to the under ribs or flanges—the depth and angularity of the ribs or flanges, and the extent to which they are sharpened. And a brief comparison of the ribs of the aluminum model of the Dunham patent, Exhibit O^8, with the ribs of "Complainant's Exhibit 15, Defendants' Infringing Tie Plate," and with the under flanges of Defendants' Exhibit O, the aluminum model of the device of first Wolhaupter patent in suit, will render it perfectly apparent that in regard to the degree of penetration, Defendants' construction will follow the Dunham patent, rather than the Wolhaupter.

This Dunham patent also illustrates the fact to which I have already called attention, that there is no functional co-operation or correlation between the formation of the rail supporting surface or top of the tie plate and the formation of its tie-engaging under surface. For Dunham shows, in Fig. 4, a flat topped plate involving all the essentials of his construction, so far as its under or tie-engaging surface is concerned. This plate of Fig. 4 of the Dunham patent is exemplified with substantial accuracy in another aluminum model which I here produce and will ask the Examiner to mark Exhibit

O^9, and to which I have already attached a tag marked on the one side with the label "Prior Art Device of Dunham Patent No. 469,-286, dated February 23, 1892 (Fig. 4)", and marked on the other side with the label "Prior Art with respect to all three Wolhaupter patents in suit," this tag being also initialed by me for identification.

It will be apparent, upon looking at this Exhibit O^9, that it will engage the tie in precisely the same manner that other form of the Dunham plate shown in Exhibit O^8 will, and the fact that its upper surface is flat, makes no difference whatever in respect to this matter of the engagement of the plate with the tie. A comparison of these models will also bring out the fact that if any relation whatever exists between the upper and lower surface conformations of such a tie plate, it can be merely a structural relation due to the corrugating of the plate through and through, so to speak. Thus I have pointed out that if any relation whatever exists between the stated characteristic of the upper and lower surfaces of the tie plate of claim 8 of the Wolhaupter patent No. 538,809, it must be a mere structural relation due to the fact that the plate defined by the claim is required to be regularly corrugated plate with the upper and lower ridges of its adjacent corrugations forming the required tie-engaging de-
541 vices of the under side of the plate on the one hand and rail supporting flanges of the upper side of the plate on the other, which of course, is entirely foreign to anything found in Defendants' tie plate construction. This structural relation, however, is perfectly disclosed in the tie plate of this prior Dunham patent, in that form of it shown in Figs. 1, 2 and 3.

Goldie Patent No. 485,030, of October 25, 1892.

Attention is called to this Goldie patent, not so much because of its resemblance to what the Wolhaupter patent No. 538,809, now under consideration, discloses, but because its construction is so nearly identical with Defendants' tie plate construction. This will be apparent from the drawing of the Goldie patent, especially Fig. 1, but to render it the more evident, I have had made and here produce an aluminum model of this Goldie tie plate which I will ask the Examiner to mark Exhibit O^{10}. I have already attached to it a separate tag, bearing on one side the label "Prior Art Device of Goldie Patent No. 485,030, dated October 25, 1892", and bearing on the other side the label "Prior Art with respect to all three Wolhaupter patents in suit." This tag I have also initialed for identification.

Now, comparing this aluminum model, Exhibit O^{10}, with the sample of Defendants' tie plate in evidence "Complainant's Exhibit No. 15, Defendants' Infringing tie Plate," it will be observed that practically the only difference between them is that the upper surface of Defendants' tie plate is depressed or channeled in two places instead of one. That is to say that the rail bearing surface of Defendants' tie plate is formed of three longitudinal strips, one at each side and one in the center of the rail base, while the Goldie tie plate has its rail bearing surface confined to the two side bearings only, the middle bearing being omitted and the depression in the surface being continued from the one side bearing to the other. Both plates have, at

one side of the rail bearing surface, a rib or shoulder for engaging the edge of the rail base to better receive the lateral thrust on the rail and resist the forcing of the track out of gauge.

The under surface of the two plates are substantially identical, except that the tie-engaging ribs of the Goldie plate are shown somewhat deeper or longer from root to point than the tie-engaging ribs of Defendants' tie plate are. Their relative location on the plate is substantially the same in the two cases. That is to say, the
542 tie-engaging ribs of each plate are located directly beneath the lateral rail supporting surfaces of the plate, so that the weight resting on the rail is exerted directly upon the sub-jacent ribs to force them into the tie. The only other difference between Goldie plate and Defendants' tie plate is that the depression on the upper side of the Goldie plate is formed by forcing the body of the plate down slightly at its center, instead of by making it thinner, with the result that the under side of the plate, between the tie-engaging ribs, is not quite flat, as it is in Defendants' tie plate.

In my opinion, this Goldie plate shown by Exhibit O[10], is so substantially identical in its construction with Defendants' tie plate, that any view of claim 8 which can make this claim applicable to Defendants' construction, must equally make it applicable to the prior art device of this Goldie patent. Thus, notwithstanding the radical differences which exist between the device of this Wolhaupter patent No. 538,809, as shown and described in the patent and as illustrated by Defendants' Exhibit O, the Goldie plate as compared with claim 8 of the Wolhaupter patent, is a railway tie plate formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie. And it is a tie plate formed on its upper side with a series of bearing surfaces on which the rail rests—bearing surfaces which are flanges, if the bearing surfaces of Defendants' tie plate are flanges, and for exactly the same reason, being exactly like these bearing surfaces of Defendants' tie plate except that only two are provided instead of three.

It will be apparent that the single groove or channel in the rail bearing surface of the Goldie tie plate of patent No. 485,030 will act to enable sand, grit and moisture to work out from beneath the rail, assuming that there is anything in this function, as to actual practice. It can not be said that the forming of this groove by bending down the center of the plate will lighten the plate, but this is of course utterly immaterial, so far as this comparison is concerned. Certainly the cutting away of surplus metal in order to lighten any construction, can not involve more than the most ordinary mechanical skill. Nor is there any structural reason why the depression in the upper surface of this Goldie plate should not be made by actually thinning the metal under the depression, leaving the bottom of the plate flat, if so desired.

543 Other Prior Patents.

Among the other patents which are prior art with respect to this Wolhaupter patent No. 538,809, I would also briefly call attention to Churchward, No. 492,528, of February 28, 1893; Reece, No. 494,-

692, April 4, 1893; Churchward No. 508,086, November 7, 1893; Servis, No. 524,868, August 21, 1894; Clark, No. 529,854, November 27, 1894; of these all except the Reece patent are referred to more particularly because of the resemblance Defendants' tie plate construction bears to them. Each shows a tie plate much more nearly like Defendants' tie plate than anything which is disclosed in the Wolhaupter patent No. 538,809 is. The Reece patent, No. 494,692, is referred to as showing a construction which responds to the terms of claim 8 of this Wolhaupter patent much more accurately than Defendants' construction does, and which is like the Wolhaupter tie plate in having tie-engaging flanges and rail supporting surfaces which extend transversely of the rail and parallel to the tie, as Wolhaupter shows them, instead of extending parallel with the rail and transversely to the tie, as in Defendants' tie plate. Any interpretation of claim 8 which can possibly include Defendants' construction within its purview, must more properly include the construction shown in this Reece patent.

To render this Reece construction more readily understood, I have had made and here produce an illuminum model which I ask the Examiner to mark Exhibit O^{11}, and which I have already tagged with a tag bearing on one side the label "Prior Art Device of Reece Patent No. 494,692, dated April 4, 1892," and on the other side the label "Prior Art with respect to all three Wolhaupter patents in suit," and also bearing my initials. This Exhibit O^{11} is a substantially correct exemplification of the tie plate shown in the Reece patent No. 494,692.

My conclusions in answer to the inquiry of your question, are therefore, that claim 8 of the Wolhaupter patent No. 538,809, of May 7, 1895, does not directly express or define any novel construction whatever, and is met and anticipated in terms by the patents of the prior art to which I have called attention, and particularly by the Wells patent No. 203,570, the Dunham patent No. 469,386, the Goldie patent No. 485,030 and the Reece patent No. 494,692. That in order to be regarded as expressing any substantial novelty whatever the claim must be construed as limited to substantially the exact construction which the Wolhaupter patent shows and de-
544 scribes, and which is exemplified by Defendants' Exhibit O, and that no view of the claim which will make its language applicable to Defendants' construction, can fail to make this language equally or more applicable to the patents of the prior art, and particularly to the Wells, Dunham, Goldie and Reece patents, to which attention has been called.

Q. 6. Will you please compare the construction shown in Exhibits B and C, in connection with the testimony of E. O. Faulkner, with the construction disclosed in claim 8 of the first Wolhaupter patent, and the patent itself, and also with the model Exhibit O^{10}, and with the tie plate marked "Complainant's Exhibit No. 15, Defendants' Infringing Tie Plate," and state the relations, resemblances and differences between these various tie plates, giving your reasons for your statements. In the discussion you may assume that Exhibits

B and C were manufactured and in use about the close of the year 1892.

A. The two tie plates, Defendants' Exhibits B and C, to which you have called my attention, I find to be so substantially like what the Goldie patent No. 485,030 shows, that I have no doubt that they were made under this patent and intended to be in conformity with it. Comparing them with the aluminum model of the tie plate of this Goldie patent, Exhibit O^{10}, for example, it will be seen that they differ from the model only in that the depression in the rail bearing surface of the plate is a little less marked and is formed, apparently, without bending down the body of the plate, so that the under side of the plate is left almost exactly flat—the plates having been somewhat bent by long service, evidently, it is difficult to say whether their under surfaces were originally absolutely flat or not.

What I have said with regard to the Goldie patent No. 485,030, in comparison with claim 8 of the first Wolhaupter patent, No. 538,809, therefore, applies substantially with regard to these plates Defendants' Exhibits B and C. And what I have said of the plate of the Goldie patent and of Exhibit O^{10} in comparison with Defendants' tie plate construction as shown by "Complainant's Exhibit No. 15, Defendants' Infringing Tie Plate," applies substantially when these plates Exhibits B and C are similarly compared with Defendants' construction.

Upon the assumpion, set forth in your question, that these Exhibits plates B and C were manufactured and in use as early as 1892, so that they form a part of the prior art with respect to
545 the first Wolhaupter patent in suit, I regard them as substantially anticipating claim 8 of the Wolhaupter patent on its face, and in any view of the claim which would render the claim applicable to Defendants' tie plate construction.

Q. 7. Please state whether or not claim 8 of the first Wolhaupter patent, namely No. 538,809, calls for any shoulder to abut the edge of the rail on the upper surface of the tie plate; I think you have already covered this, but for fear of its having been omitted I will put the question.

A. It does not. There is no mention of any such element as this shoulder in the claim. A shoulderless plate, such as those shown, for example, in the cuts on pages 8, 9 and 10 of Complainant's publication "Track," in evidence as Complainant's Exhibit 23, would answer just as completely to claim 8 of the Wolhaupter patent, as the shouldered construction more particularly illustrated in the patent would, unless the claim is to be regarded as limited to this particular shouldered construction which the patent illustrates and describes and which is exemplified by Defendants' Exhibit O.

Q. 8. Please compare the tie plate construction shown by "Complainant's Exhibit 15, Defendants' Infringing Tie Plate" with the construction disclosed in the patent B, Wolhaupter tie plate, No. 538,809, patented May 7, 1895, and particularly with claim 8 of said patent and state whether or not you find that said Complainant's Exhibit 5 embodies or discloses any novel construction defined by this claim?

A. Defendants' tie plate, shown by "Complainant's Exhibit No. 15, Defendants' Infringing Tie Plate," is about as remote from anything which the Wolhaupter patent No. 538,809 discloses, as it is possible to conceive of in devices intended for the same general purpose. A glance at Defendants' Exhibit O, exemplifying the device of this first Wolhaupter patent in suit, in comparison with Complainant's Exhibit 15, exemplifying Defendants' infringing tie plate, will demonstrate this fact most completely, if any demonstration is needed. It is only by abandoning, as it were, every showing of the Wolhaupter specification and drawing, and relying instead upon the bare phraseology of the claim, considered abstractly and independently of the showing in the drawings and specification, that any suggestion of identity between Defendants' tie plate and Wolhaupter's claim 8 can for an instant be recognized.

The tie plate shown in the Wolhaupter patent is most evidently one in which the corrugations, grooves and flanges, both above and below the plate, are designed to run parallel with the tie—
546 with the grain of the wood of the tie—and transversely of the rail. Whereas, on the other hand, Defendants' tie plate is one which has its tie-engaging ribs on the under side of the plate and the bearing surfaces for the rails, with their intervening grooves or channels, on the upper side of the plate, extended transversely to the tie—across the grain—and parallel with the rail.

The Wolhaupter tie plate is essentially a corrugated plate. It is the corrugations of its body which furnish the so-called rail bearing flanges on its upper side, and the tie-penetrating flanges on its under side, and which gives to this plate the "arch and girder" construction, concerning which more or less has been said in this record by the practical witnesses heretofore examined, and which is referred to in the specification of the patent, beginning at line 92 of page 1, as follows:

"It will be observed that by this form of plate there is much less opportunity or chance or buckling than with the ordinary flat plate since each point where the rail rests upon the plate, is supported and trussed by metal which is more or less on edge instead of on its side, thereby forming for each resting point of the rail two girders c^7 joined at the apex by the top flanges c^4 where the rail rests."

On the other hand Defendants' plate is essentially a flat plate. Except for the very slight interruption of the two small tie-engaging ribs, its under surface is absolutely flat, and the rail-supporting portions of its upper surface, instead of being each "supported and trussed by metal which is more or less on edge instead of on its side," rest flat upon the tie. Nor are these rail supporting surfaces formed by or due in any way to a corrugated formation of the body of the plate. On the contrary, they are the natural, flat upper surface of the plate, and the only reason that the entire rail bearing surface of the plate is not continuous, is that a portion of the metal of the plate, unnecessary for strength, is rolled away, without altering the essentially flat form of the plate for the sake of rendering the structure lighter.

The Wolhaupter plate is one in which the forcing of the tie-en-

gaging flanges deeply into the wood of the tie so that they will "separate the grain of the tie," as stated at line 86 of page 1 of the Wolhaupter specification, is essentially contemplated, and is one in which the resistance of the ends alone of the tie-penetrating flanges is relied upon to prevent the track from being pushed out of gauge. Whereas in Defendants' plate the entire length of the small ribs on the
547 under side of the plate, extending as they do across the grain, acts to prevent and resist movement of the plate along the tie under the lateral pressure on the rail, and to thus prevent the track from getting out of gauge. While the shallowness of these ribs is designed to accomplish this action without, as I am informed, cutting into the wood, the fibre of the tie being simply depressed by these ribs so that the cutting and decay incident to the forcing of deep flanges into and between the fibres of the tie lengthwise of its grain, as in the case of the Wolhaupter plate, are avoided.

In view of these obvious and characteristic differences between the tie plate which the Wolhaupter patent illustrates and describes, and in view of the disclosures of the prior art and particularly of the Wells, Dunham and Goldie, I am unable to find in Defendants' tie plate shown by "Complainants' Exhibit No. 15, Defendants' Infringing tie Plate" any novel construction whatever that is defined by claim 8, inquired of. In fact, as has already been pointed out, this claim does not, on its face, or in its phraseology, define any novel construction whatever, in view of the disclosure of the prior art, but simply recites features of construction which were commonly employed in the art at this time, both singly and together. While if the claim be regarded as less broad than its phraseology, taken on its face, might indicate, the fact that Defendants' tie plate construction so closely follows the prior art and so much more nearly resembles the tie plate of the Goldie patent and of Defendants' Exhibits B and C, renders it impossible to apply it in any way to Defendants' construction without making it apply even more accurately to the tie plates of the prior art.

As I have already stated, it is only by construing claim 8 as for substantially the precise construction of tie plate shown and described in the patent and exemplified by Defendants' Exhibit O, that it can be differentiated, if at all, from the tie plate constructions which were in vogue at and prior to the alleged invention of this Wolhaupter patent, and of course considering any such view of the claim, Defendants' tie plate is, as pointed out, not only different in almost every material and substantial respect, but was remote from the Wolhaupter disclosure as it is perhaps possible to conceive of.

I do not find that the tie plate construction shown by "Complainant's Exhibit 15, Defendants' Infringing Tie Plate" embodies or shows any novel construction defined by claim 8 of the Wolhaupter patent No. 538,809.

548 Mr. Cooke:

Q. 9. Will you please compare the constructions which such of the Letters Patent noticed in the answer and offered in evidence, dated prior to January 14, 1902, and not already examined, or if you

choose, referring also to the construction of any Letters Patent already discussed by you and pertinent to this question, with claims 1, 2 and 3 of Letters Patent issued to B. Wolhaupter for a railway tie plate No. 691,332, and dated January 14, 1902, and state what if any novelty you find disclosed in said claims 1, 2 and 3 of said Letters Patent 691,332, or any or either of them in view of the constructions disclosed by said prior Letters Patent, illustrating your answer and discussion with any models which have been supplied you, and stating fully your reasons for all conclusions.

A. The tie plate construction set forth in this second Wolhaupter patent No. 691,332, is quite clearly shown in the drawing, and particularly in the perspective view constituting Fig. 1 of the drawing of the patent, and is accurately exemplified by the aluminum model which has been introduced in evidence as Defendants' Exhibit O[1], to which model I have attached a second tag bearing on its opposite sides the label "Device of Second Wolhaupter Patent in Suit No. 691,332, dated January 14, 1902."

Looking at this Wolhaupter tie plate, either as shown by the drawing or model, it will be observed to have a flat body portion from which four deep and somewhat sharpened flanges depend in parallel relation to penetrate and engage the wood of the tie, while four directly super-jacent parallel flanges are provided on its upper surface to afford support for the rail.

These directly opposite upper and lower flanges constitute the gist of the alleged improvement of this second Wolhaupter patent, so far as claims 1 and 2 are concerned, these claims being substantially identical except that the second claim recites that the lower flanges are "sharpened to permit them to readily enter the tie," while the first claim does not mention this detail, leaving it to be assumed that a blunt or unsharpened flange would equally be within the definition of this claim. Thus the claims read:

"1. A railway tie plate provided on its upper side with one or more flanges on which the rail may rest or by which it is directly sustained and on the under side with one or more tie-engaging
549 flanges extending parallel with the upper flanges and directly beneath the latter, substantially as described.

"2. A railway tie plate provided on its upper side with one or more flanges on which the rail may rest and by which it is directly sustained and on the under side with one or more tie-engaging flanges extending parallel with the upper flanges and directly beneath the latter and sharpened to permit them to readily enter the tie, substantially as described."

Claim 3 is substantially like claim 2, except that it additionally specifies "an additional flange or flanges extending above the plane of the rail sustaining flanges and adapted to receive the lateral thrust of the rail." These additional flanges are shown in the drawings of the patent at E, and are clearly apparent on the model Exhibit O[1]. They are shown as literally "additional" to the rail sustaining flanges previously mentioned in the claim, although there appears to be no good reason why this is so, or in other words, why these last mentioned flanges, which receive the lateral thrust

of the rail, should not rise directly from the rail sustaining flanges, just as they do, for example, in the first Wolhaupter tie plate, exemplified by Defendants' Exhibit O. The only object or function of these flanges is to form an abutting shoulder for the outer side of the rail base so as to tend to keep the track in gauge and this, of course, is precisely the same object or function as that of the flanges c^4 of said first Wolhaupter patent. Claim three reads:

"3. A railway tie plate provided on its upper side with one or more flanges on which the rail may rest and by which it is directly sustained, on the under side with one or more sharpened tie engaging flanges extending parallel with the upper flanges and directly beneath the latter, and on the upper side with an additional flange or flanges extending above the plane of the rail sustaining flanges and adapted to receive the lateral thrust of the rail, substantially as described."

With respect to all of the flanges shown in this second Wolhaupter patent No. 691,332, both those above and below the body of the plate, including the abutting flanges for receiving the thrust of the rail, it will be noted that they extend transversely to the rail or parallel to the tie, and this is made a primary feature of the
550 alleged invention of this patent by the statement of the patentee at the outset of his specification, contained in lines 27-34, as follows:

"To this end, therefore, *the invention primarily consists* in the provision on the upper side of a tie plate of one or more flanges or projections for sustaining the rail and *on the under side flanges for entering the tie parallel with the grain thereof,* the flanges on the lower side being located directly or substantially beneath those on the upper side." (Italics mine.)

The claims under consideration, however, do not in terms mention this arrangement of the flanges "for entering the tie parallel with the grain thereof," and it is for the court to determine whether or not, in view of the statement that such arrangement is a primary feature of the invention, the claims must be construed as including it. But inasmuch as it is evident that if thus construed, there can be no infringement of these claims by Defendants' tie plate, in which all of the ribs and socalled flanges extend across the grain instead of with the grain of the tie, I shall, in the ensuing comparison of the prior art, ignore this possible limitation of the claims, and treat them as though flanges or the like running across the grain of the tie and parallel with the rail would come equally within their purview, which of course is necessarily complainant's contention, as voiced by Complainant's expert witness, Mr. McElroy.

Prior Art with Respect to Second Wolhaupter Patent in Suit No. 691,332, January 14, 1902, Wells Patent.

As in the case of the first Wolhaupter patent, the earliest patent of the prior art to which I will direct attention, is that to Wells, No. 203,570, of May 14, 1878. In the tie plate of this patent, it will be remembered, the under or tie-engaging rib E, is disposed directly

beneath the upper middle rail supporting rib or surface, C. Assuming, therefore, that the claims of the Wolhaupter patent apply to flanges which run longitudinally of the rail and transversely of the tie, as well as flanges which run transversely to the rail and longitudinally to the tie, as Wolhaupter shows, and as must necessarily be the case if Defendants' construction is identified by these claims, the Wells patent responds precisely to claim 1, and differs from claims 2 and 3 only in the respect that its downwardly projecting tie engaging rib is not shown as sharpened. Thus as
551 compared with claim 1 of this Wolhaupter patent No. 691,332, Wells shows a railway tie plate provided on its upper side with one or more surfaces on which the rail may rest and by which it is directly sustained. And these rail supporting surfaces of the Wells patent are flanges if the similar rail supporting surfaces of the defendants' tie plate can be so called. And this plate of the Wells patent is provided "on the under side with one or more (one in fact) tie-engaging flanges (the rib E) extending parallel with the upper flanges and directly beneath the latter," exactly as claim 1 sets forth.

And the same comparison holds as between the Wells patent and claim 3 of this Wolhaupter patent No. 691,332, (except as to the sharpening of the tie-engaging flange), since the Wells patent also shows "an additional flange or flanges extending above the plane of the rail sustaining flanges and adapted to receive the lateral thrust of the rail." The Wells device differs from what claims 2 and 3 define, simply in havnig a lower or tie-engaging flange which is not sharpened, and I have already pointed out that it was equally common in this art to employ sharpened tie-engaging ribs or flanges, if desired, so that this amounts to nothing more than a distinction without a difference. The first Wolhaupter patent in suit, already considered, if there were no other prior art, must have completely exhausted all possible novelty in the disclosure of a sharpened tie-engaging flange, years prior to this second patent in suit.

The characteristic details of the construction shown by Wells have already been so fully considered in my answer to Q. 6, relating to the first Wolhaupter patent in suit, that I deem it unnecessary to go into them further at this point. In that answer I pointed out that while this plate of the Wells patent was called a railway chair, and was shown in the illustration and described in the specification as extending over two or more ties for the purpose of supporting a rail joint between them, it nevertheless possessed and disclosed the necessary characteristics of a tie plate and would be simply a tie-plate if made exactly the same as the patent shows, except shorter in length, or as exemplified, for example, by Exhibit O^6, the aluminum model which I have tagged "Prior Art Device (shortened) of Wells Patent No. 203,590, dated May 14, 1878."

I also pointed out in that discussion, that while the Wells patent did not show any spike holes in its plate, this omission had no material significance, since spike holes in devices of this charac-
552 ter have commonly been supplied or omitted entirely according to the desire or choice of the user or party having them

made, and since there is nothing about the construction of the Wells plate which would prevent the use of spikes passing through the plate, instead of the use of spikes that simply embrace the edges of the plate, if so desired. I cited the Servis patent No. 239,407, of November 8, 1881, as an illustration of the fact that the same tie plate device was made with and without spike holes, and I would call attention further in this connection to the fact that the second Wolhaupter patent No. 691,332, now under consideration, does not itself show any spike holes, or refer to them, Wolhaupter leaves it with the mechanic to provide spike holes as desired, or to leave them out entirely if preferred, as in many of the other prior art patents showing tie plates. As, for example, the patent to Servis No. 249,616, the patent to Reece, No. 488,662, of December 27, 1892, as to which the specification states that it may be used either with or without rail spikes extending through the plate (see lines 107-111, page 2), the patent to Harris, No. 514,828 of February 13, 1894, the patent to Chamberlain No. 538,817, of May 7, 1895, and the patent to Wolhaupter No. 579,509, of March 23, 1897.

Goldie Patent No. 485,030.

To this patent, of October 25, 1892, I also have already called extended attention. And I have pointed out that its underneath or tie-engaging ribs are located directly beneath the longitudinal rail-bearing surfaces of the plate, exactly after the manner followed in defendants' construction as shown by Complainant's Exhibit No. 15.

This Goldie patent, therefore, also responds in every detail, to the requirements of claims 1, 2 and 3 of this second Wolhaupter patent in suit, No. 691,332, if defendants' tie plate construction does. That is to say, Goldie shows a railway tie plate provided on its upper side with one — more longitudinal rail bearing surfaces on which the rail may rest or by which it is directly sustained, and which may be termed "flanges" just as accurately and for the same reason that the longitudinal rail-supporting surfaces of defendants' tie plate may be so called. And this Goldie patent shows its tie plate as provided "on the under side with one or more (in fact two) tie-engaging flanges extending parallel with the upper flanges (or rail-supporting surfaces) and directly beneath the latter," substantially as claim 1 sets forth.

553 The same comparison must also obviously hold with respect to claim 2, since the only difference between these two claims is that the second describes the tie-engaging flanges as sharpened to more readily enter the tie, and since the Goldie patent shows its tie-engaging ribs or flanges as similarly so sharpened. And the same comparison must hold with respect to claim 3, since Goldie also shows an additional rib or flange for sustaining the lateral thrust of the rail—an additional flange which is identical in fact with that provided in defendants' construction, and already identified by complainant's expert witness with this feature of Wolhaupter's claim.

Reece Patent No. 494,692, April 4, 1893.

This patent shows a railway tie plate which is, perhaps, more nearly identical with the actual tie plate construction disclosed by Wolhaupter in his second patent in suit No. 691,332, than anything in the prior art. And it shows a construction which responds precisely to the phraseology of all three of Wolhaupter's claims.

To better illustrate this patent I have already produced an aluminum model, Defendants' Exhibit O[11], and an examination of this exhibit will show at once and very clearly the accuracy of the statement which I have just made. For the Reece tie plate as thus exemplified, will be seen to possess three parallel downwardly projecting and sharpened flanges adapted to penetrate the wood of the tie parallel with its grain. While this Reece plate will be seen to be provided on its upper side with one or more flanges upon which the rail may rest and by which it is directly sustained. There are, in fact, two such rail supports which take the form of distinct flanges, these being the extreme outer supports formed by the upper portions of the outer downwardly projecting flanges. And as to these two rail-sustaining flanges, it will be noted, not only that the outer tie engaging flanges extend parallel to them, as Wolhaupter describes, but extend directly beneath them, as his claim points out.

The third rail supporting surface of this Reece tie plate is several times broader than either of the others, but except for its greater width, is of precisely the same character, and is located in precisely the same relation to the middle tie-engaging rib. And of course its additional width can not change these essential facts of its mechanical structure, or alter the presence of the outer rail sustaining flanges to which I have already called attention.

554 As regards claim 1 of this Wolhaupter patent No. 691,332, therefore, the Reece patent shows a tie plate "provided on its upper side with one or more flanges on which the rail may rest or by which it is directly sustained," and provided "on the under side with one or more tie-engaging flanges extending parallel with the upper flanges and directly beneath the latter," also substantially as the claim points out. As compared with claim 2, the same situation obtains, since this claim differs from claim one only in reciting that the tie-engaging flanges are sharpened and since the tie-engaging flanges of the Reece plate are thus sharpened. And as compared with claim 3, the same identity still remains, since this claim simply adds to the other features the "additional flanges" extending above the plane of the rail-sustaining flanges and adapted to receive the lateral thrust of the rail, and since the presence of these additional flanges on the Reece tie plate will be evident on inspection.

My conclusion, therefore, in answer to your question, is that claims 1, 2 and 3 of this second Wolhaupter patent in suit, No. 691,332, do not in their terms or on their face express any substantial novelty, and are not distinguished from the devices of the prior art, and especially from the devices of the Wells, the Goldie No. 485,030, and the Reece patents. And I further conclude that it is impossible to distinguish between these claims and the structures of the prior art

unless the claims are regarded as limited to substantially the exact construction which Wolhaupter illustrates in his patent No. 691,332, and which is exemplified by Defendants' Exhibit O^1.

Q. 10. Compare the tie plate construction shown by Complainant's Exhibit 15, Defendants' Infringing Plate with the construction disclosed by Wolhaupter Letters Patent No. 691,332, and especially with said claims 1, 2 and 3 of said patent, and state whether or not you find said "Complainant's Exhibit 15 Defendants' Infringing Tie Plate," discloses any novel construction defined by these claims 1, 2 and 3 of said Letters Patent 691,332, or any or either of them?

A. The only possible novelty in these claims of the Wolhaupter patent No. 691,332, being dependent upon their being construed as being for substantially the exact construction illustrated and described in the patent and exemplified by Defendants' Exhibit O^1, according to the conclusions which I have just above expressed, it is obvious that defendants' construction as shown by Complainant's Exhibit No. 15, can not disclose, and employ or embody any
555 novelty involved in these claims, assuming there is any, owing to the utterly different character of the two devices. It needs but a moment's glance at the two exhibits "Complainant's Exhibit No. 15" and Defendants' Exhibit O^1, to demonstrate this fact.

Moreover the substantial identity between defendants' construction and certain structures of the prior art, as for example, the Goldie patent, exemplified by Defendants' Exhibit O^{10}, render it obvious that it is impossible to view these claims in any light which will render them applicable to defendants' construction without, at the same time, rendering them applicable to the prior art construction and to anticipation thereby.

I do not find that "Complainant's Exhibit No. 15," defendants' infringing structure, embodies, discloses or employs any novel construction defined by claims 1, 2 and 3 of Wolhaupter patent No. 691,332, the second patent here in suit.

I would also point out, in this connection, that while it would seem unprofitable to enter into a discussion of whether or not the longitudinal rail-bearing surfaces of defendants' tie plate can be termed "flanges," in any proper sense of that expression, it is certainly true that the relationship between the upper and lower flanges expressed by these Wolhaupter claims ceases to have any significance if the term "flanges" be extended, so far as the rail bearings are concerned, to include such wide, flat bearing surfaces as those of defendants' tie plate, and be at the same time regarded as descriptive of such insignificance as narrow ribs as are the tie engaging ribs on the under side of defendants' tie plate. For it is not true, in any substantial sense, that the weight on defendants' tie plate will be sustained by reason of the location of the rail-supporting bearings directly over these ribs. This is true in the Wolhaupter tie plate of patent No. 691,332, for the reason that the rail-sustaining flanges are in effect nothing more than the upper portion of the tie-engaging flanges, so that of this construction the patentee truly remarks, at line 77, of page 1, that

"It will thus be seen by the above construction that I have provided a plate wherein the rail is sustained above the body of the plate by flanges on the upper side of the plate and that directly beneath these flanges are located the tie-engaging flanges, so that the weight will be sustained at the point where there is the greatest pressure on the plate."

On the contrary, in defendants' plate, the weight is sustained not by the tie-engaging ribs, but substantially entirely by the flat
556 bottom of the plate. The sustaining effect of the small tie-engaging ribs is purely incidental, and so far as the support of the plate is concerned, it makes no difference whether they are present or absent. In fact, it will be noted that defendants' plate does not have any tie-engaging ribs beneath its central rail-supporting surface where possibly the pressure to be sustained is greater than at either side.

As applied to such a construction as that of defendants' tie plate, therefore, these requirements of the Wolhaupter claims of patent No. 691,332, as to its tie-engaging formation on the one hand and its rail-supporting formation on the other hand, are devoid of any such co-operation interdependence or interaction as is necessary to a legitimate combination. As thus applied they become simply separate characteristics, brought together in the same structure, but independent of each other and equally important and advantageous whether separately or conjointly used. In other words, while it is possible to regard these claims as legitimate, if applied to the tie plate construction which Wolhaupter shows and upon which the claims are based, they become mere recitations of aggregated as distinguished from combined elements or characteristics when the attempt is made to broaden them out so as to apply to such an entirely different construction as that of defendants' tie plate.

Mr. Brown: It being proposed to adjourn until Monday, December 13, instead of continuing tomorrow, in order to accommodate court engagements which defendants' counsel Mr. Reed has in Philadelphia this week, complainant's counsel states that the adjournment to such date will inconvenience him, for the reason that relying upon his understanding with Mr. Reed that when he should begin the taking of defendants' proof he would continue with substantial continuity until the same were completed, and upon the notice of November 16, under which these proofs are being taken, that the same would be continued from day to day until completed, complainant's counsel has made other engagements for next week, but is prepared to continue during the present week, his engagements for next week including two engagements at Buffalo on the 14th and 15th, respectively.

Complainant's counsel will endeavor to re-arrange his engagements for Monday, the 13th, and, therefore, consents to the adjournment until that date upon the understanding, however, between himself and Mr. Reed, to the effect that if at the conclusion of the di-
557 rect examination of the expert witness Carter, it is necessary to adjourn over for another day, that such adjournment will

be made to suit the convenience of complainant's counsel; in other words, that defendants' counsel will accommodate complainant's counsel in order of date for cross-examining witness, Carter.

This statement is placed upon the record to avoid misunderstanding because of the temporary absence from the place of examination of Mr. Reed, defendants' solicitor, although the examination has proceeded under the direction of Mr. Cooke, defendants' counsel, who has been present this afternoon.

Whereupon an adjournment was taken to December 13, 1909, at 10 o'clock A. M.

December 13, 1909—10 o'clock a. m.

By agreement of counsel an adjournment was taken to December 14, 1909, at 10:30 o'clock A. M.

December 14, 1909—10.30 o'clock a. m.

Met pursuant to adjournment.

Present: Mr. Poole on behalf of complainant. Mr. Williams on behalf of defendants.

HENRY W. CARTER, resumed the stand; direct examination continued as follows:

Q. 11. Please compare the constructions which any of the above named letters patent named in the answer, and offered in evidence, and which bear date prior to February 24, 1903, which you have not heretofore discussed, or, if in your judgment pertinent, with any of the letters patent which you have already discussed with letters patent B. Wolhaupter, Tie Plate, No. 724,644, dated February 24, 1903, and state what, if any, novelty you find disclosed in claims 7 and 9 of said last named letters patent, giving full explanation and reason for any statement in your answer, and referring to any models of tie plates, or exhibits of tie plates which may be furnished you in this connection.

A. The tie plate construction of this third Wolhaupter patent 721,644, is shown as embodied in several different forms, all
558 of which are characterized by certain peculiarities due to the way in which the tie plate is made, or rather, to the form of the bar of metal from which it is made. For this bar is assumed to be an ordinary railroad rail, the first object of the invention, as stated by the patentee, being "the manufacture of a tie plate made from old or discarded railroad-rails, whereby the cost of manufacture will be greatly cheapened."

Fig. 1 of the drawing shows such a rail in section, and shows the manner in which the web of the rail is cut through at *a*, so as to leave the base of the rail and the greater part of its web in suitable shape to permit the contemplated tie plate to be rolled from it. The head of the rail is not left in such convenient shape for this purpose, and the patent suggests that it may form "a convenient billet for the manufacture of arrow teeth or other light articles as commonly made, or it may be rolled into a billet plate in a familiar

manner." The patent, however, states that by a little additional rolling, the head of the rail may also be manufactured into the tie plate of this patent.

A noticeable feature of the tie plate produced in this matter is the deep central flange d', which results from the web of the rail. This deep central flange characterizes each of the several forms in which the tie plate is illustrated in the patent, and it is apparently this deep central flange which is referred to by the second object of invention, as stated in the opening paragraph of the description, to wit, the production of a plate "which will more firmly cling to the ties than those heretofore in common use." The specification describes this central flange, rolled from the web of the rail, as "having parallel sides and a sharpened end d^2 in order that the flange may enter the fibres of the wood easily and deeply." Depending marginal flanges d^3 of more ordinary proportions, are also provided on the edges of the plate, parallel with the deep central flange, to enter and engage the tie.

The several modified forms of tie plate shown in this patent are made clear by Defendants' Exhibits O^2, O^3 and O^4, already in evidence, which I find to be substantially accurate models of what the patent shows in its several figures. Defendants' Exhibit O^2 illustrates the plate shown in Figs. 2, 3 and 4, and I have accordingly attached to it a tag bearing the label "Device of third Wolhaupter patent in suit, No. 721,644, dated February 24, 1903 (Figs. 2, 3 and 4)." Fig. 2 is stated in the specification to show one form of the tie plate, and Figs. 3 and 4 to show another form, but
559 as a matter of fact the two forms differ from each other so slightly that a single model serves to illustrate both with substantial accuracy. The only difference which I am able to detect between them is the grooves or channels on the upper surface of the plate are shown in Fig. 2, as made slightly deeper at their ends than at the middle, so that the bottom of the channels slopes downwardly toward the edges of the plate from the middle of the plate. Whereas the channels shown in the upper surface of the plate in Figs. 3 and 4 are apparently of uniform depth. The model follows Fig. 2 in this particular, but at the same time substantially represents Figs. 3 and 4. Defendants' Exhibit O^3, shows the construction illustrated in Figs. 5, 6 and 7, and I have accordingly attached to the model a tag bearing the label "Device of third Wolhaupter patent in suit 721,644, dated February 24, 1903 (Figs. 5, 6 and 7)." Defendants' Exhibit O^4 illustrates the form of plate shown in Fig. 8 of the patent, and I have accordingly attached to this model a tag bearing the label "Device of third Wolhaupter patent in suit No. 721,644, dated February 24, 1903 (Fig. 8)." I have placed my initials on each of these label tags, for identification.

Looking at these exhibits models, it will be observed that all of the three (or four) different forms in which the plate of this patent is represented, possess the same notable characteristics. Each has the deep middle flange and the two shallow marginal flanges on its under side to engage the tie. Each has its upper surface grooved or channeled to form the supporting surface for the rail, the stated

object "being to so dispose the grooves as to provide sand spaces below the rail bearing surface." In each the under flanges of the plate are so disposed as to extend parallel to the grain of the tie, and at right angles to the rail. The patent states as to this that

"Of course it will be understood that my tie plate B will be placed upon the tie longitudinally—that is to say, so that the flanges d', and d^3 will be parallel with the grain of the wood."

As to the direction of the channels on the upper surface of the plate, the illustration in each instance is that of channels extending transversely, or nearly so, with respect to the flanges on the under side of the plate, i. e., extending substantially parallel to the rail. As to this, however, the patentee does not appear to be particular, for he states that the

"grooves may extend squarely across the tie plate and the
560 flanges, as shown in Fig. 6, or they may extend in a diagonal line, as shown in Fig. 3." (Page 1, line 103 et seq.)

And later that

"I do not limit my invention to facing the channels with sloping bottoms across the tie plate, since manifestly these channels may be placed in any desired direction."

The word "faced," as here used, appears to be inapt, but I understand it to mean pointed or directed, and that it refers to the direction in which the channels on the upper surface of the tie plate are extended or pointed with reference to the directions in which the rails and ties lie.

The only difference between Exhibit- O^2 and O^4 it will be noted, is that the channels come clear to the surface of the plate on its middle line transversely of the rail and directly above the deep lower flange of the plate. Exhibit O^3 adds to the structure an abutting shoulder to receive the outer edge of the rail. This, however, is regarded by the patentee as a mere matter of choice, for he simply says with regard to it

"In the form shown in Figs. 5, 6 and 7, it may be desirable to use one or more shoulders for the rail flange, and such rail-abutting shoulder is shown at F."

This merely "may be desirable" feature of the ordinary rail-abutting shoulder, which, as already repeatedly pointed out, was well known in the art years prior to this third Wolhaupter patent, is made a feature of the claims to which your question relates, which claims in fact apply only to the form of plate illustrated in Figs. 5, 6 and 7, and of which Defendants' Exhibit O^3 is a model. At least this is true so far as their naked phraseology goes, for the only features of tie plate construction which they define are the "transverse grooves or channels," and the "transverse rail-abutting shoulder" at one margin of the grooved rail-supporting surface. Claim 9 differs from claim 7 only in specifying that the transverse grooves or channels extend to the edge of the plate. The situation presented on the face of the patent itself is therefore peculiar. For the only two structural characteristics which the claims specify are those which in the one case, the specification states may be arranged otherwise than as the claims specify, and which in the other case,

the specification describes as merely a "may be a desirable" feature. In the case of the channels or grooves, the specification points out, it will be remembered, that they may be extended either transversely across the plate, as the claim points out, or in a diag-
561 onal line, or "in any desired direction." In the case of the rail-abutting shoulder, the specification points out that it may be employed or omitted as desired, by showing several forms of the same plate from which it is omitted, and furthermore describes it, in the instance of Figs. 5, 6 and 7, as simply a figure which "may be desirable."

On the face of the patent, therefore, the margin for novelty is evidently exceedingly small, and an examination of the prior art in connection with the claims under consideration would seem to eliminate it completely, for every feature referred to and called for by these claims was repeatedly disclosed in the prior art, both in the prior patents to which attention has already been called, and in other prior patents presently to be referred to.

Wells Patent No. 203,570.

The device of this patent has already been fully described, and will be at once recognized as "provided in its rail-supporting surface with transverse grooves or channels" and as provided "at one margin of said supporting surface with a transverse rail-abutting shoulder," or rather with two such shoulders, as the patent in suit suggests may be the case in line 20, page 2. Each characteristic of claim 7 is, therefore, found in this Wells plate, and since the channels in its rail-supporting surface reach to the edge of the plate, claim 9 is equally responded to by this construction.

I say that the channels B, in the Wells plate are transverse channels, for the reason that they run tranversely to the tie, or longitudinally with respect to the rail, which is the meaning of the expression "transverse" as it appears in the claims in issue. It happens that the dimensions of the plate illustrated in the Wolhaupter patent are such that the grooves or channels are also transverse to the longest dimension of the plate, but this is a mere incident or accident of the illustration. It has nothing whatever to do with the construction of the plate, for it is obvious that the plate would not be in any way different, if widened out so as to have its longest dimension lie in the direction of the channels or longitudinally with respect to the rail, instead of transversely with respect to the rail and longitudinally of the tie. The only substantial direction, with respect to *which* the direction of the channels and rail-abutting shoulder, are those of the rail and tie, and it is of course with respect to these that the claim specifies the direction of its grooves or channels, and its rail-abutting shoulder. These are
562 required to be transverese with respect to the tie, which means longitudinal with respect to the rail, and which is exactly the situation in the Wells device. Indeed, it necessarily follows that a rail-abutting shoulder must be extended longitudinally with respect to the rail, or parallel with it, and conse-

quently transverse with respect to the tie, since this shoulder abuts on the longitudinal margin of the flange of the rail. And since, in order to be consistent, the word "transverse" must be given the same meaning in the two places in which it appears in each claim, it would follow from this consideration, even if there were no other, that the grooves or channels specified by the claims are also longitudinal with respect to the rail and parallel to the rail abutting shoulder.

With regard to the question of whether the so called "railway chair" of this Wells patent is entitled to be considered a tie plate, I would refer again to my discussion of this point, had in connection with the first Wolhaupter patent, and would merely repeat, at this point, that since it possesses the essential characteristics of a tie plate, it is a tie plate, structurally, no matter what it is called. It certainly, at least, has the precise character of rail-supporting and abutting surfaces which the patent in suit specifies in these claims, and has it for the same reason, i. e., to make the structure lighter with the same strength and provide receptacles for the escape of sand or grit from beneath the rail, thus insuring a firm bearing for the rail. This is stated in so many words at the top of the second column of the Wells specification, and the specification of the Wolhaupter patent in suit may well have been copied from the Wells patent in respect to this point.

Before leaving the Wells patent it may be pointed out that its tie-engaging rib or flange X E, extends longitudinally with the rail, or across the grain of the tie, instead of transversely of the rail and with the grain of the tie. The claims in issue, however, are silent as to the construction of the under side of the plate, so that no distinction between the claims and the Wells device can be drawn by reason of this difference. Moreover, it will be noted that the tie-engaging ribs of defendants' tie plate follow the Wells patent and not the Wolhaupter patent in this particular, so that if it is contended that the claim in issue may be narrowly construed as impliedly involving the under flanges which the Wolhaupter patent discloses, and which are extended longitudinally of the tie and with the grain of the wood, this same contention must necessarily exclude the structure which is now charged to infringe these claims.

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Gould Patent No. 280,030.

This patent of June 26, 1883, also shows a tie plate construction responding precisely to the phraseology of the claims in issue, especially in that form of plate shown in Fig. 5 of the Gould patent. The grooves or channels in the upper surface of this Gould tie plate were designed for the purpose of receiving inter-fitting rims on the under side of the rail, and obviously such a tie plate structure could equally well be employed under an ordinary rail having a flat base, and if so employed, would leave the grooves or channels unoccupied and free to act as receptacles or drains for sand and moisture, assuming that there is in practice any such function actually subserved by such channels, which I understand defendants' engineer experts to deny.

Dockstader Patent No. 462,399.

I have already pointed out that while this Dockstader patent is less obviously a tie plate than the so called rail-joint of the Gould and Wells patents, for example, it shows a base or base-plate having all of the characteristics of a tie plate, and simply having in addition the inwardly curved up-standing flanges D′, which embrace the rib of the rail, to better hold the rail ends in alignment. And an examination of this base plate will show that it has precisely the characteristics which the claims in suit point out, except that it shows but a single transverse channel or groove, instead of a plurality of such grooves, the difference being a mere matter of the duplication of the grooves.

Goldie Patent No. 485,030.

This patent, of October 25, 1892, also responds precisely to the terms of the claims in issue, except that it has but a single transverse channel or groove in its rail supporting surface, and as before stated, this difference is simply a matter of duplicating the groove. The substantial identity between this Goldie tie plate and defendants' tie plate, makes this patent of peculiar interest in connection with these claims which defendants' tie plate is charged to infringe. I am unable to find any view in which the claims in issue can be held to define such construction as defendants' tie plate, and
564 yet be materially differentiated from the tie plate of this Goldie patent.

The Goldie tie plate of this patent No. 485,030, it will be remembered, is exemplified by Defendants' Exhibit O^{10}, to which I have attached the tag bearing the label "Prior art device of Goldie patent 485,030, dated October 25, 1892." Attention is again called to this model and also to the model of the Dockstader device, Exhibit O^{7}, and of the shortened prior art device of the Wells patent, Exhibit O^{6}. A reading of the claims in issue with these exhibits in view, will give point to my statements that the characteristics of the claims are completely disclosed in each of these prior art devices.

Goldie Patent No. 540,356.

This patent, dated June 4, 1895, shows a modification of the Goldie tie patent of patent No. 485,030, known to the railway world as the "Goldie claw." The form of this plate as shown in Fig. 2 and Fig. 3, also responds to the claims in issue, in every material respect. The conformation of the upper or rail bearing surface of this plate, in fact, is simply that of the earlier Goldie plate.

Wolhaupter Patent No. 579,509.

This earlier Wolhaupter patent, dated March 23, 1897, shows a very interesting construction, particularly in Figs. 1 and 2, which I have had exemplified by an aluminum model which I here produce and will ask the Examiner to mark Exhibit O^{12}. I have attached to this model a tag bearing the label "Prior Art Device of

Wolhaupter patent No. 479,509, dated March 23, 1897," on one side, and bearing on its other side the label "Prior art with respect to first and second Wolhaupter patents in suit." A glance at this model, which is a substantially correct exemplification of what this Wolhaupter patent shows in the figures mentioned, will make it plain that Wolhaupter himself, six years before the date of the patent in suit, had patented a tie plate that is accurately described by the terms of the claims in issue and a tie plate which, moreover, is strikingly similar in its upper surface conformation, to defendants' tie plate.

The rail bearing surface of this tie plate, as shown in the drawing and model, is somewhat inclined, but it will be understood that this is simply an optional feature of the construction sometimes
565 followed in tie plates and sometimes eliminated or omitted from them. I take it that tie plates of this character—having inclined rail supporting surfaces,—may have been particularly intended for use on curves, but whether so or not is immaterial, for the patent states (line 35, page 1) that "the rail seat may be formed on an incline as shown, or not, as desired." The patent also states that "the plate may or may not be formed with a rail abutting flange C, but I prefer to form it with such a flange," and this statement is significant when it is considered that the provision of such a rail abutting flange is claimed as one of the elements of alleged novelty in the claims in issue, filed five or six years later.

I have already pointed out that spike holes are sometimes provided in these tie plates and sometimes omitted. In the plate of this 1897 Wolhaupter patent No. 579,509, no spike holes are shown. I have indicated in pencil on the aluminum model the points where such spike holes might naturally be provided. Or the plate could be spiked down without having spike holes, by letting the heads of the spikes hook over its edges, if so desired. Or it might be left in place beneath the rail without being spiked down, the rail itself being spiked down at the edges of the plate, as shown in the Servis patents No. 249,407 and No. 294,816, for example.

A slightly modified form of this Wolhaupter plate of patent No. 579,509, is shown in Fig. 3 of the patent, and this form also responds substantially to the definition of the claims in issue, as will be evident from an examination of the aluminum model of this figure of the patent which I here produce and will ask the Examiner to mark Exhibit O[13]. I have attached a tag to this exhibit bearing on one side the label "Prior art device of Wolhaupter patent No. 579,509, dated March 23, 1897," and on the other side the label "Prior art with respect to first and second Wolhaupter Patents in suit."

In the plate of this patent, as shown in Fig. 3, and as exemplified by this model last referred to, the channel or depression in the rail supporting surface of the plate is a rather wide single channel or groove, which the base of the rail spans. The patent, however, states that "this depression may be of a variety of shapes in cross section," and Figs. 1 and 2 show a double groove, of which the separating ridge does not quite reach to the rail base. But there is not the

slightest reason why it should not reach clear to the rail base, if it was considered desirable to roll the plate in this manner, and yet remain perfectly consistent with all this patent discloses.

566 Moreover, it makes no substantial difference whether it does or not. As I have said, the difference between one channel and a plurality of channels is simply a matter of duplication. The described functions of lightening the plate and affording an opportunity for the sand and moisture to escape from the rail bearing, are subserved by cutting away or channeling the rail bearing surface of the plate either with a single groove or channel or with a plurality of such grooves. Moreover, the Wells patent, the Dunham patent, the first Wolhaupter patent in suit No. 538,809, and the second Wolhaupter patent in suit, No. 691,332, (which latter are both prior art in respect to the third Wolhaupter patent now under consideration) show that the lightening of tie plates and providing for the escape of sand and moisture from beneath the rail bearing, by means of a plurality of channels, transverse or longitudinal, as desired, was equally common in the art prior to the patent under consideration, as a glance at the models of these patents in evidence will show.

Wolhaupter Patent No. 691,037.

This patent shows a so called rail joint, the base plate of which, as in so many other of these devices, is essentially a tie plate. In the form shown in Fig. 10, in particular, it is a tie plate responding precisely to the claims in issue, and is a device which would equally support these claims. In other words, the claims in issue might equally well have been contained in this earlier Wolhaupter patent, of January 14, 1902, and based upon the structural disclosure of this patent.

To better illustrate this fact I have had constructed and here produce an aluminum model of the base plate of the rail joint of this patent, and will ask the Examiner to mark it Defendants' Exhibit O[14]. I have attached a tag to this model bearing on one side the label "Prior art device of Walhaupter patent No. 691,037 dated January 14, 1902, Fig. 10," and on the other side the label "Prior art with respect to third Wolhaupter patent in suit." A glance at this model is all that is needed to show that it discloses every feature of the third Wolhaupter patent in suit, set forth in the claims in issue.

It will be understood that the base plate illustrated by this last mentioned model is shown in this Wolhaupter patent No. 691,037, as employed in connection with an angle plate which hooks over the raised edge of the base plate and extends inwardly along the

567 flange of the rail and upwardly beside its web, so that it can be bolted through the web of the rail, as shown in Fig. 7. In order that the complete device may be before the court, I have also had this angle plate constructed, and here produce it, asking the Examiner to identify it as Exhibit O[15]. I would simply point out with respect to this angle plate, that the fact of its provision does not in any way alter the essential construction of the base plate, or the fact that this base plate might be separately used as an ordinary tie plate if so desired.

My conclusion, therefore, is, with regard to claims 7 and 9 of this third Wolhaupter patent in suit, No. 721,644, that every feature of the construction defined by the claims is repeatedly disclosed in the prior art, both separately and brought together in the same relation which this patent sets forth, and that these facts are particularly shown by the Wells, Dockstader, Goldie and Gould patents referred to, and by Wolhaupter's own prior patents No. 579,509 and No. 691,037.

I would further point out, in this connection, that there is no particular co-operation, interaction or interdependence between the transverse channel in the rail supporting surface of the tie plate of this patent, and the rail abutting shoulder. Each of these features performs the same function which it would perform if the other were absent, and the presence or absence of the one does not in any way change or alter the situation as to the other. There is, therefore, no particular reason why in considering the question of novelty as to these claims, the court should be confined to such patents as disclose these features in the same structure, or why, if found separately in the prior art, they would not equally show lack of novelty in the claims in issue.

Thus the feature of having the rail supporting surface channeled or cut away to lighten the plate and provide for the escape of sand and moisture from beneath the rail (assuming that this is a material function), is shown in a great number of other patents besides those particularly mentioned in this answer, as a glance at the folio of patents in evidence will render apparent. See, for example, the Dunham patent, and the patent to Goldie No. 610,179, September 6, 1898; to Goldie No. 631,039, of August 15, 1899; Kinney, et al., 631,873, of August 29, 1899; to Charlton No. 649,623, May 15, 1900; to Avery No. 662,850, November 27, 1900, to Sellers, No. 684,466, October 15, 1901, and to Jones, No. 691,317, January 14, 1902. These
568 patents show the grooves or channels running transversely to the rail, as the tie plate is ordinarily employed, but it would certainly be open to the user to twist the plate around and use it with the channels running longitudinally of the rail if so desired, there being nothing in the construction of the plate—no rail abutting shoulder, for example, to prevent this. While the patent itself points out, it will be remembered, that these channels may be laid "in any direction," as well as transversely or obliquely of the plate.

Just so the feature of the rail abutting shoulder taken separately from the feature of the grooves or channels in the rail supporting surface, is disclosed in a great number of other prior patents than those heretofore mentioned, as, for example, in the Goldie patent No. 457,584, August 11, 1891; the Churchward patent No. 492,528, February 28, 1893, and No. 508,086, November 7, 1893, the Holmes patent No. 514,467, of February 13, 1894, and the Servis patent No. 524,868, August 21, 1894.

If no other prior art was disclosed than these two sets of patents last mentioned, therefore, I would still consider the claims in issue devoid of substantial*ly* novelty, in view of the lack of co-operation or combination between the features of the channeled rail bearing sur-

face and the rail abutting shoulder. However, the patents to Wells, Dockstader, Goldie, Gould, and the prior Wolhaupter patents No. 691,037, and No. 579,509, show that it was also common in the prior art to employ these features together and in the same relation which the patent in suit sets forth.

Whereupon an adjournment was taken to December 15, 1909, at 10:30 o'clock A. M.

December 15, 1909—10:30 o'clock a. m.

Met pursuant to adjournment.

Present: Mr. Poole, on behalf of complainant; Mr. Reed, on behalf of defendants.

HENRY W. CARTER resumed the stand, examination continued as follows:

Q. 12. Compare the tie plate construction shown by "Complainant's Exhibit 15, Defendants' Tie Plate," with the construction disclosed in the said letters patent to B. Wolhaupter, Tie Plate, No. 721,644, dated February 24, 1903, and particularly with said claims 7 and 9 thereof, and state whether or not you find said "Complainant's Exhibit 15, Defendants' Infringing Tie Plate" to embody or disclose any novel construction defined by these claims 7 and 9 of letters patent No. 721,644 or any or either of them, giving fully your reasons for any conclusions or statements which you may make, and referring to and using in connection with your answer any models, tie plates, or any tie plate exhibits which may be supplied to you.

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A. For the reasons pointed out at length in my last answer, the naked terms of claims 7 and 9 of this third Wolhaupter patent No. 721,644, fail to express or state any novel construction whatever, and simply recite features which were old in art, in this line of devices, both individually, and when together embodied in the same tie plate structure. To the extent that Defendants' tie plate construction employes similar features, it does so in common with the devices of the prior art, and as a result of the disclosures of the prior art instead of any disclosures of this Wolhaupter patent.

To lay a foundation for any differentiating characteristic between what these claims recite and what the prior art shows, it is necessary to view the claims as impliedly including and referring to substantially the precise construction of tie plate which the patent illustrates and describes, including its peculiar under side formation, as well as the formation of its upper surface. And it needs but a glance at Complainant's Exhibit 15, in connection with Defendants' Exhibits O^2, O^3 and O^4, the models of the several modified forms of tie plate disclosed in this Wolhaupter patent, to make clear the substantial and radical differences between the structures, and the fact that defendants' tie plate follows the old art, and particularly the Goldie patent No. 485,030 (see Exhibit O^{10}), rather than the construction here disclosed by Wolhaupter.

I do not mean by this to be understood as expressing the opinion

that even as thus restricted, the claims in issue would express substantial novelty, since it would occur to me as highly questionable whether, in view of the great variety of forms in which tie plates have been provided with flanges, large and small, for penetrating the wood of the tie in the direction of its grain, there could be any novelty involved in the flange arrangement which this patent sets forth. I have simply not investigated the question from this standpoint, since defendants' tie plate construction is so entirely remote from
570 the particular tie plate construction disclosed by Wolhaupter and necessarily assumed to be defined by these claims, as thus restricted, that such an inquiry would be an idle one. All that I wish to point out is that by no possibility, so far as I am able to find, can the claims of the patent, unless considered as referring and as restricted to Wolhaupter's precise construction of tie plate, be regarded as expressing any novel construction whatever, and that if so restricted, it is obvious that defendants' tie plate does not respond to them, but discloses a materially and substantially different construction.

There is nothing whatever in the way of a novel structural feature disclosed in the Wolhaupter patent and particularly in the claims in issue, which I find to be followed, utilized or embodied in defendants' tie plate.

Mr. Reed: Counsel for defendants offer in evidence the following aluminum models referred to in the evidence of the witness, Henry W. Carter, and identified in his testimony by the following letters and numerals respectively, the said Exhibits O, O^1, O^2, O^3 and O^4 having been referred to in the testimony of the witnesses William B. Storey, Jr., and Edwin O. Faulkner, that is to say "Exhibit O," being device of first Wolhaupter Patent in suit, No. 538,809.

Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O" on the ground that the same is not a fair and correct exemplification of the tie plate of said Wolhaupter patent No. 538,809.

Mr. Reed: Defendants' counsel offer in evidence aluminum model marked "Exhibit O^1" being device of second Wolhaupter patent in suit, No. 691,332.

Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O^1" because the same is not a fair and correct exemplification of the tie plate of said patent No. 691,332, and more particularly because the drawings of said patent illustrate the tie plate thereof as provided with three prongs at each end, while the model is provided with two prongs only at each end.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^2," being device of third Wolhaupter patent in suit, No. 721,644.

Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O^2," because the same is not a fair and correct exemplification of Figures 2, 3 and 4 of patent No. 721,644.

571 Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^3," being device of third Wolhaupter patent in suit No. 721,644.

Mr. Brown: Complainant's counsel objects to the model marked

"Exhibit O^3," because the same is not a fair and correct exemplification of Figures 5, 6 and 7, of said patent No. 721,644.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^4," being device of the third Wolhaupter patent in suit, No. 721,644.

Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O^4," because the same is not a fair and correct exemplification of Figure 8 of said patent No. 721,644.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^5," being prior art device of Wells patent No. 203,590, full length.

Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O^5," on the ground that the same is incompetent, irrelevant and immaterial, and is not a fair and correct exemplification of the rail chair disclosed in the Wells patent No. 203,590. Said model is also objected to because of the erroneous and misleading language used on the label attached to said model in which the same is described as a "prior art device," when in fact the model has no relation to the art of tie plates but is produced as an exemplification of a portion of the rail chair shown and described in said Wells patent No. 203,590.

Mr. Reed: Defendants' counsel offer in evidence model "Exhibit O^6," being prior art device shortened, of Wells patent No. 203,590.

Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O^6," on the ground that it is incompetent, irrelevant and immaterial, and because the same is not a fair and correct exemplification of the rail chair shown in the Wells patent No. 203,590. Said model is also objected to because it purports to be an exemplification of a part only of the rail chair of said patent, is unfair and misleading, and does not conform to the drawings of said patent. Said model is also objected to because the same bears a label indicating the same to be a "prior art device" when in fact the Wells patent No. 203,590 relates to railway chairs and not to the tie plate art.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^7," being prior art device of Dockstader patent No. 462,399.

572 Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O^7," on the ground that it is incompetent, irrelevant and immaterial, is not a correct exemplification of the rail joint of the Dockstader patent No. 462,399, and because the "lock rail joint" shown in said Dockstader patent is not a tie plate and not adapted for use as a tie plate. Said model O^7 is further objected to because it purports to embody only a portion of the lock rail joint illustrated and described in the Dockstader patent No. 462,399, and does not correctly represent such part. Said model O^7 is further objected to by reason of the misleading words applied to the label thereto attached, indicating that the same is a "prior art device" when in fact the model purports to represent part of a rail joint and has no relation to the prior art of tie plates.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^8," being prior art device of Dunham patent No. 469,386.

Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O^8," on the ground that the same is incompetent, irrelevant

and immaterial, and is not a fair and correct exemplification of the structure illustrated by Figures 1 and 2 of the Dunham patent No. 469,386. Objection is made to said model marked O^8 more particularly for the reason that said model is of cast metal and not of sheet metal as contemplated by said Dunham patent, and in failing to conform in proportion and dimensions with the tie plate intended to be represented by said drawings, as explained by the specification of said Dunham patent.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^9," being prior art device of Dunham patent No. 469,386.

Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O^9" for the reason that the same is incompetent, irrelevant and immaterial and is not a fair and correct exemplification of the tie plate shown in Figure 4 of the Dunham patent No. 489,386. Said model marked O^9 is more particularly objected to because it fails to correspond in shape and dimensions with the tie plate shown in said Figure 4 of the Dunham patent and described in the specification thereof.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^{10}," being prior art device of Goldie patent No. 485,030.

Mr. Brown: Complainant's counsel objects to the model "Exhibit O^{10}," for the reason that the same is incompetent, irrelevant and immaterial and is not a correct exemplification of the construction shown in the drawings of the Goldie patent No. 485,030, and
573 described in the specification thereof. Said model is objected to more particularly because it fails to conform in shape, dimensions and proportions with the drawings of said Goldie patent.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^{11}," being prior art device of Reece patent No. 494,692.

Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O^{11}," for the reason that the same is incompetent, irrelevant and immaterial, and is not a fair and correct exemplification of the tie plate illustrated in the drawings of said Reece patent No. 495,692, and described in the specification thereof.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^{12}," being prior art device of Wolhaupter patent No. 579,509, Fig. 3.

Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O^{12}," on the ground that the same is incompetent, irrelevant and immaterial and is not a fair and correct exemplification of the tie plate illustrated in the drawings of the Wolhaupter patent No. 579,509, and described in the specification thereof.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^{13}," being prior art device of Wolhaupter patent No. 579,509.

Mr. Brown: Counsel for complainant objects to the model marked "Exhibit O^{13}," on the ground that the same is incompetent, irrelevant and immaterial and is not a fair and correct exemplification of the tie plate illustrated in the drawings of the Wolhaupter patent No. 579,509, and described in the specification thereof.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O^{14}," being prior art device of Wolhaupter patent No. 691,037.

Mr. Brown: Counsel for complainant objects to the model marked

"Exhibit O[14]," on the ground that the same is incompetent, irrelevant and immaterial and is not a fair and correct exemplification of the rail joint structure illustrated in the drawings of the Wolhaupter patent No. 691,037, and set forth in the specification thereof. Said model O[14] is further objected to because it purports to exemplify one piece or part only of the combination of parts constituting the rail joint described in said Wolhaupter patent, is different in form, proportion and relative dimensions from anything shown in said patent, and does not fairly represent the structure illustrated in Figure 10 of said patent, as stated on the label attached to said model
574 O[14]. Said model marked O[14] is further objected to by reason of the language on the label thereto attached which indicates that the same is a "prior art device" when in fact, the Wolhaupter patent relates to a rail joint and not to a tie plate.

Mr. Reed: Defendants' counsel offer in evidence "Exhibit O[15]," being prior art device angle plate Wolhaupter patent No. 691,037.

Mr. Brown: Complainant's counsel objects to the model marked "Exhibit O[15]," because incompetent, irrelevant and immaterial and not a fair and correct exemplification of the rail joints shown in the Wolhaupter patent No. 691,037. More particularly the said model O[15] is objected to because purporting to represent only one part or element of the rail joint shown in said Wolhaupter patent drawings. It is also objected to because of misleading character of the words found on the label attached to said model, indicating that the same is a "prior art device" when in fact it relates to a rail joint and not a tie plate.

Whereupon an adjournment was taken to Wednesday, December 22, 1909, at 10:30 o'clock A. M.

December 22, 1909—10:30 o'clock a. m.

Met pursuant to adjournment.
Present: Mr. Reed, Mr. Cooke and Mr. Mehlhope.

HENRY W. CARTER resumed the stand for further direct examination:

Q. 13. Please refer to the Wells patent specifications, No. 203,570, and state from your examination of the drawings and specification your opinion as to the necessity under such drawings and specifications of actually cutting the tie in order to seat the tie plate or the lower projection thereof in the tie.

A. The question of whether or not the tie would have to be cut in order to enable the Wells plate to be firmly seated on the tie, would depend upon the dimensions of the under rib E, of the plate, and upon the character of the wood employed for the tie.

If this rib was made of the proportion and particularly of the depth which the drawing indicates, it would probably re-
575 quire to cut into the tie, especially if the tie were made of hardwood, especially oak. If, however, the rib was made no deeper than the under ribs of defendants' tie plate which are only

about a quarter of an inch in depth, the weight of the train would force the tie plate down to a firm seat upon the tie without requiring any cutting of the tie to receive the rib. Such a small rib would simply depress the fibre of the tie, just as the similar small ribs of defendants' tie plate do, and would probably not cut or penetrate the fibre to any extent.

The whole question of whether or not the under or tie-engaging ribs or flanges of tie plates and similar devices will require to be cut into the tie, is dependent upon several conditions. Flanges which run longitudinally of the tie or with the grain of the wood, can be forced into it more readily than flanges which run transversely or across the tie, and consequently can be made deeper without requiring to be cut into the tie. Where deep penetration is contemplated also, a sharpened flange is obviously desirable owing to the greater ease with which it will enter. Where various shallow flanges are employed, as in the Goldie plate, Defendants' Exhibits B and C, and as in defendants' tie plate, the very shallowness of the rib, on the other hand, makes it an indifferent matter whether the rib is sharpened or not. It is bound to sink into the wood the slight distance—the quarter of an inch or so—necessary to a firm seating of the plate on the tie, whether sharpened or not, simply as the result of the trains passing over the rail.

The depth of the rib or flange employed, I would further point out, is entirely a matter of choice with the mechanic, and so far as the Wells patent is concerned, there is no reason why it should not be made as shallow as the ribs of defendants' tie plate, for example. Indeed this is tacitly admitted by complainant's witnesses, who identify the shallow quarter inch ribs on the under side of defendants' plate with the under ribs or flanges of the second Wolhaupter patent in suit, No. 691,332, notwithstanding the fact that these latter are shown nearly four times as deep, as will be seen upon examining Defendants' Exhibit O[1].

Q. 14. You have, in your answer, spoken of the Wells construction as a tie plate; it is mentioned and named in the patent as a railway chair. Would there be any difference in the construction or function *or* this device in its use as a railway chair than the functions and uses as a tie plate in the particulars you have described in your last answer?

576 A. None whatever. And in this connection I would repeat what I have already pointed out, that the term "railway chair" or "railroad rail chair," and the terms "wear plate" and "tie plate," have been used interchangeably in this art, so that no difference whatever can be predicated upon name given the device. The term "rail joint," also, is frequently applied to devices which are essentially tie plates or wear plates and which have no peculiarities whatever that adapt them for use under the meeting ends of the rail rather than at intermediate points between the rail ends. The Goldie patent No. 426,503, of April 29, 1890, for example, shows what is called a "railroad rail chair," although it is nothing more nor less than a tie plate. The Gould patent No. 280,030, of June 26, 1883, shows a device which is entitled a rail joint, although it has no

characteristics which do not equally adapt it for use as a tie plate, and although it has nothing whatever to do with the joining of the rails except as it may be placed under the meeting ends of the rails, just as it may be placed anywhere else along their length. The Hudson patent, No. 142,020, August 19, 1873, also, shows what is called a rail joint, although the base plate D, which it illustrates, is a short plate adapted to rest on but a single rail, and perfectly capable of being used simply as a tie plate, if so desired. I call attention to this Hudson patent particularly because it is referred to in the Wells patent in an acknowledgment that even as long ago as 1878, when the Wells patent was taken out, it was a recognized practice to provide devices of this character with a lower depending flange to prevent movement of the plate and hold the track in gauge.

Q. 15. Please examine the drawings and specification of Letters Patent No. 142,020, J. L. Hudson, railway rail joints, August 19, 1873, and state whether the drawings and specification show a device with a shoulder and a groove or corrugation on the upper surface and a lower projecting flange engaging in the tie? And in that connection point out anything which you may find in the specifications relative to the shape of the lower projecting flange.

Question objected to by complainant, as incompetent, irrelevant and immaterial.

A. The base plate D, of this Hudson patent, which, as I have said is essentially a tie plate. It has a groove in its upper or rail supporting surface, and shoulders at each side of the surface to engage the edges of the rail base, and hold the rail against movement on the plate. The plate also has a lower depending flange, or rib,
577 substantially like that of the Wells patent. In fact the cross section of this plate is identical on its under surface with the plate shown in the Wells patent. On its upper surface it differs simply in having but a single longitudinal groove instead of two of such grooves.

The rail shown by Hudson has a depending longitudinal flange B, fitting into the groove in the upper surface of the plate. Obviously, however, a rail of ordinary section, not provided with this depending rib or flange could as well be employed, and would be perfectly supported by the plate. And under such circumstances the groove in the upper surface of the plate would simply serve as a groove for conduc-ing off sand and moisture and for lightening the plate, just as the Wells patent describes, and just as Wolhaupter later claims in connection with his patents in suit.

Q. 16. Please take the aluminum models which I have marked Exhibits O^{16}, O^{17}, O^{18} and O^{19}, examine them, identify them if you can as illustrative of any of the constructions shown in the patents introduced in evidence, and make any explanation in connection with the models and the patents with which they are connected, if any, which you may desire.

A. Exhibit O^{16} I find to be a substantially correct exemplification of the tie plate of the Hart patent No. 696,964, of April 8, 1902. I have accordingly attached to it a tag bearing my initials and marked

on one side with the label "Prior Art Device of Hart Patent No. 696,964, dated April 8, 1902, application filed November 1, 1901," and bearing on the other side the label "Prior Art with respect to third Wolhaupter patent in suit."

Exhibit O^{17}, I find to be a correct exemplification of the tie plate shown in the Jones patent No. 691,317, of January 14, 1902. Application filed July 12, 1899, except that the exhibit does not show the spike holes indicated in the drawing of the Jones patent. I have accordingly indicated the existence and position of these spike holes by pencil marks, and have attached to the Exhibit a tag bearing my initials and having on one side the label "Prior Art Device of Jones patent No. 691,317, dated January 14, 1902," and bearing on the other side the label "Prior Art with respect to third Wolhaupter patent in suit."

Exhibit O^{18} I find to be a correct exemplification of the tie plate shown in Fig. 3 of Goldie patent No. 610,179, of September 6, 1898, except that it does not show the spike holes indicated in the drawing of the Goldie patent on Fig. 3. I have accordingly indicated on the exhibit the position of these spike holes by pencil marks, and
578 have attached to the exhibit a label bearing my initials and marked on one side "Prior Art Device of Goldie patent No. 610,179, dated September 6, 1898, Fig. 3," and marked on the other side "Prior Art with respect to third Wolhaupter patent in suit."

Exhibit O^{19}, I find to be a correct exemplification of the tie plate shown in Figs. 1 and 2 of this same Goldie patent No. 610,179, of September 6, 1898, and I have accordingly attached to it a tag bearing on one side the label "Prior Art Device of Goldie patent 610,-179, dated September 6, 1898, Figs. 1 and 2," and bearing on the other side the label, "Prior Art with respect to third Wolhaupter patent in suit."

I have also initialed this tag for identification.

Mr. Reed: Counsel for defendant offer in evidence drawings and specifications of Letters Patent 142,020, J. L. Hudson, railway joint, patented August 19, 1873, and asks that it be marked Exhibit S^{67}.

Mr. Mehlhope: Counsel for complainant objects to the offering in evidence of the above named patent because it is immaterial and irrelevant; and for the further reason that it is not set up in defendants' answer.

Mr. Reed: Defendants' counsel offer in evidence as Exhibit O^{16}, the aluminum model marked Exhibit O^{16}, and tagged "Prior Art Device of Hart Patent 696,964, dated April 8, 1902, application filed November 1, 1901," and further tagged "Prior Art with respect to third Wolhaupter patent in suit."

Mr. Brown: Complainant's counsel objects to the model, Exhibit O^{16}, as incompetent, irrelevant and immaterial, and not a fair illustration of the device of the Hart patent. And further objects to the improper tagging of the model; and further objects to it as not representing the prior art with respect to the first and second Wolhaupter patents in suit.

Mr. Reed: Defendants' counsel offer in evidence as Exhibit O^{17}, the aluminum model marked Exhibit O^{17} and further tagged "Prior

art of Jones patent 691,317, dated January 14, 1902," and further tagged "Prior Art with respect to third Wolhaupter patent in suit."

Mr. Brown: Complainant's counsel objects to the model Exhibit O^{17}, as incompetent, irrelevant and immaterial, as not a fair representation of the device of the Jones patent, and as not representing any device prior to the date of the first and second Wolhaupter patents in suit.

Mr. Reed: Defendants' counsel offer in evidence as Exhibit O^{18}, aluminum model marked Exhibit O^{18}, and tagged "Prior art device of Goldie patent 610,179, dated September 6, 1898, Fig. 3,"
579 and also tagged "Prior Art with respect to third Wolhaupter patent in suit."

Mr. Brown: Complainant's counsel objects to the aluminum model Exhibit O^{18}, as incompetent, irrelevant and immaterial, as not being a fair representation of Fig. 3 of the Goldie patent No. 610,179, and also as not representing any device of the prior art with respect to the first and second Wolhaupter patents in suit.

Mr. Reed: Defendants' counsel further offer in evidence as Exhibit O^{19}, the aluminum model marked Exhibit O^{19} and tagged "Prior Art Device of Goldie patent No. 610,179, dated September 6, 1898, Figs. 1 and 2," and further tagged "Prior Art with respect to third Wolhaupter patent in suit." Each and all of said aluminum models being further initialed "H. W. C."

Mr. Brown: Complainant's counsel objects to Exhibit O^{19}, as incompetent, irrelevant and immaterial, as not being a fair representation of the device of the Goldie patent No. 610,179, as being improperly tagged, and because not representing any device of the prior art with respect to the first and second Wolhaupter patents in suit.

Complainant's counsel further objects to the Hudson patent, No. 142,020, marked Defendants' Exhibit S^{67}, because it is for a patent for "Railway rail-joints" and not for a tie plate.

Complainant's counsel further objects to Defendants' Exhibits A to M and M^1, inclusive, N to R, inclusive, O, O^1 to O^{15}, inclusive, as irrelevant and immaterial.

Adjourned to 2 o'clock P. M., of the same day.

December 22, 1909—2 o'clock p. m.

By agreement, adjourned to December 23, 1909, at 10 o'clock A. M.

580 December 22, 1909—10 o'clock a. m.

Met pursuant to adjournment.
Present: Mr. Brown, Mr. Reed and Mr. Cooke.

HENRY W. CARTER resumed the stand:

Cross-examination by Mr. Brown:

X Q. 17. Have you based any opinion or conclusion expressed in your deposition, upon any patent or patents set up in the defendants' answer in this cause, or otherwise known to you, other than the pat-

ents which have been specifically referred to by you and introduced in evidence as exhibits herein?

Mr. Reed: Objected to by counsel for defendant as incoherent and incomprehensible.

A. No, except in the general way that almost every one of the prior patents in evidence shows one or more of the features of tie plate construction which are involved in this comparison and particularly in the claims of the Wolhaupter patent in suit, in issue herein. I have made specific reference to certain of these patents, because they have occurred to me to disclose the most pertinent constructions of the prior art, relative to Wolhaupter's claim.

X Q. 18. What patent or patents, other than those specifically introduced in evidence as exhibits by defendants, and to which you have made specific reference, have you taken into consideration in forming any conclusion or giving any opinion that you have expressed in your direct examination?

A. To answer this question would require me to list off practically the entire volume of prior patents introduced in evidence, except those which would be omitted as having been already considered. I will proceed with this list, if you so desire.

X Q. 19. I do not care for the list as a list, but what I want to know is, whether in giving your answers on direct examination, you have considered any patents other than those specifically referred to by you, or other than the patents introduced in evidence by defendants' counsel, and if so, what patent or patents you have so considered?

A. I see I have misunderstood the real inquiry of your questions in this regard. I have not considered any other patents than
581 those introduced in evidence in behalf of defendants.

X Q. 20. You have made specific reference to certain patents only of the whole number introduced by the defendants. Are there, in your opinion, any structures shown or described in any of the patents to which you have not heretofore made specific reference, that are as good and complete references to any feature of invention of either of the claims of the Wolhaupter patents in suit, as are the features of construction which you have heretofore pointed out when making reference to specific patents?

Mr. Reed: Objected to as calling for an impossible judgment comparison, and requiring the witness to compare something which he has not testified with a judgment which he has not expressed; and as requiring the witness to pass an opinion upon his own evidence.

A. In order to answer this question I should first have to explain that the only "feature of invention" I have been able to discover in either of these Wolhaupter patents in suit, is the precise form of tie plate which the patent specifically describes and illustrates, and that I consider the question of invention highly doubtful even at that, especially in the case of the third Wolhaupter patent in suit. The device of the first Wolhaupter patent in suit, exemplified by "Defendants' Exhibit O," is so far distinctive in appearance and apparently in construction, by reason of its being cut off diagonally

so as to be capable of being minutely adjusted endwise on the tie by the manipulations set forth in the patent, that I would not undertake to deny its novelty, when confined to this specific device. Nor would I undertake to say that the specific form of tie plate shown in the second Wolhaupter patent in suit, exemplified by "Defendants' Exhibit O^1," was not sufficiently distinctive in its specific form to be regarded in its entirety, as a "feature of invention." The various devices shown in the third Wolhaupter patent in suit, and exemplified by "Defendants' Exhibits" O^2, O^3 and O^4, are much less distinctive—so much so that I consider it highly questionable whether they contain or constitute anything which could be properly referred to as a "feature of invention."

Assuming, however, that by "feature of invention," you mean such structural features as are involved in the Wolhaupter claims, especially in the broad view of these claims expressed by complainant's expert witness Mr. McElroy, in comparing them with
582 defendants' tie plate, I would reply that while I do not find any patent in evidence which discloses any one of these structural features in any better form or any more fully than the patents specifically mentioned by me, there are a number of patents not specifically mentioned by me, but also in evidence, which disclose some one of these features perhaps equally as well as some of the patents which I have heretofore specifically mentioned.

X Q. 21. Then, as I understand you, the patents that you have specifically referred to and selected out of the total number of defendants' exhibit patents, are the best references to the several points or conclusions for which you have made use of them; is that understanding correct?

A. Yes.

X Q. 22. Which prior patent of those to which you have made reference, do you consider to be the most pertinent reference by way of defense or to support any conclusion which you have expressed, with respect to the first Wolhaupter patent in suit?

Mr. Reed: Objected to on the same grounds as the last.

A. There are so many points of view from which this first Wolhaupter patent in suit can be considered, that I am unable to answer this question by reference to any single patent. The particular device illustrated and described in this first Wolhaupter patent and exemplified by Defendants' Exhibit O, appears, as I have said, to be quite distinctive. The nearest approach to it in the prior art, considering it as a complete whole, is perhaps the tie plate of the Reece patent, No. 494,692, of April 4, 1893, which is exemplified by Defendants' Exhibit O^{11}. This Reece tie plate has similar sharp flanges on the under side of the plate running longitudinally of the tie and penetrating between the fibres of the wood with its grain and has very similar parallel short end flanges on the upper side of the plate forming abutting shoulders for the edges of the rail base.

This Reece patent, does not, however, disclose the zig-zag, or through and through corrugation of the body of the plate, which is noticeable in the device of the first Wolhaupter patent, when viewed endwise (see Defendants' Exhibit O). As to this feature, I

should say that the Dunham patent, No. 469,386, of February 23, 1892, was the best reference to the prior art. In fact, it shows this feature perfectly, as a glance at Defendants' Exhibit O^8, which exemplifies this Dunham construction, will make clear.

583 Considering your question as confined to claim 8 of this first Wolhaupter patent, which alone is in issue, and considering this claim in the light of the opinion expressed by complainant's expert witness, Mr. McElroy, in which he identified the construction which this claim defines with the defendants' tie plate, I should say that the Wells patent, No. 203,590, of May 14, 1878, and the Goldie patent No. 485,030 of October 25, 1892, were the best references, and as between them I should place greater emphasis on the Goldie plate, as exemplified by Defendants' Exhibit O^{10}, because it shows so completely the essential features of defendants' construction. Defendants' plate I regard as simply a development of this Goldie plate, uninfluenced by anything which the first Wolhaupter patent in suit discloses.

X Q. 23. Of all of the prior patents which you have considered in giving your deposition, which one do you consider the most pertinent reference by way of defense, or to support any conclusion which you have expressed, with respect to the second Wolhaupter patent in suit?

A. Again I would state that the Reece patent, No. 494,692, comes nearer to disclosing the precise tie plate construction of this second Wolhaupter patent, than any other prior patent which has been called to my attention. Again, however, I am obliged to point out that an entirely different point of view is presented if your question is to be taken as confined to the claims of this second Wolhaupter patent in suit, to-wit, claims 1, 2 and 3. Considering these claims, and viewing them in the same light as that expressed in the opinion of Mr. McElroy, complainant's expert witness, in his identification of the structure which these claims define with defendants' tie plate structure, I would call attention particularly to the Wells patent and to the Goldie patent No. 485,030, because of the fact that they not only respond to the naked terms of the claim, but respond to these terms in the same way that defendants' tie plate responds to them, if at all. And as between these two patents I would, as before, regard the Goldie tie plate, of patent No. 485,030, as most in point, because of its particularly close resemblance to defendants' tie plate construction. I would, however, also call attention in this connection, to the device of the Wolhaupter patent No. 579,509, of March 22, 1897, particularly as shown in Figs. 1 and 2 of this patent. I consider this a particularly pertinent reference to the claims of this second Wolhaupter patent, because of the fact that it discloses the tie plate structure much more nearly like defendants' tie plate than anything which is disclosed in the second Wolhaupter patent in suit.

584 X Q. 24. Of all the prior patents to which you have made reference in your deposition, which patent do you consider to be the best reference by way of defense or to support any conclusion you have expressed with respect to the third Wolhaupter patent in suit?

Mr. Reed: Objected to as requiring the witness to express an

opinion on his own evidence and to make comparison of judgments or opinions expressed and unexpressed.

A. The particular tie plate structures illustrated and described in this third Wolhaupter patent in suit are perhaps more nearly disclosed by the Sellers patent No. 684,466, of October 15, 1901. It will be remembered that this third Wolhaupter patent is particularly designed with respect to its manufacture from old rails, and that the patent sets forth this fact at length and illustrates it in Fig. 1 of its drawings. The tie plate of the Sellers patent, just referred to, is intended to be similarly manufactured from old rails, and has the same characteristic deep center flange running the length of the plate on its under side, and adapted to penetrate deeply into the wood of the tie along its grain, or lengthwise of the tie. The Sellers patent is also rolled with the grooves or depressions in its upper or rail-supporting surface, which the third Wolhaupter patent in suit sets forth, and while these grooves or depressions (sand-troughs, Sellers calls them) are shown by Sellers as running transversely of the rail, whereas the third Wolhaupter patent shows them as running longitudinally of the rail, it will further be remembered that Wolhaupter's specification states that these grooves may be extended in any direction, which would include the arrangement disclosed by Sellers. And besides, as already repeatedly pointed out, longitudinal as well as transverse "sand-troughs" or grooves in the rail supporting surfaces of a tie plate had been repeatedly disclosed in the art prior to this time.

Again, however, in considering the inquiry as confined to claims 7 and 9, which alone are in issue, and considering these claims broadly and in the view taken by complainant's expert, Mr. McElroy, in identifying them with defendants' tie plate, I should call attention to the Wells patent and to the Goldie patent No. 485,030, as perhaps the most pertinent references, mentioning also the tie plate of Figs. 1 and 2 of Wolhaupter patent No. 579,509, which is also prior art with respect to this third Wolhaupter patent in suit. As before, I would mention the Goldie patent with particular emphasis because of its complete disclosure of the essentials of defendants' tie plate construction.

585 X Q. 25. Have you seen any tie plate in actual use in track like any of the constructions shown in any of the prior patents to which you have made reference in your deposition, and if so, when and where and what plate?

A. I have, of course, seen many tie plates on tracks in various places, but until my attention was called to them by this controversy, I never had occasion to particularly examine or know the details of their construction, and can only say that they might or might not have been such plates as the patents of the prior art disclose. In other words, I do not know that I have ever seen any of these prior art tie plates in actual use.

Since my attention was called to tie plates by my employment in this case, I have examined a number of tie plates under the rails of the Santa Fe Railroad Company in their yards at 18th street. I believe these plates to have been made like complainant's Exhibit 15,

exemplifying defendants' tie plate structure, but I did not have the rail taken up to make absolutely certain of this fact. I saw a pile of such plates alongside the track, however, and was given to understand by the section hand who was employed at this point, that the plates which I saw under the rails were of the same kind. Aside from this I have not carefully examined any tie plates in actual use.

X Q. 26. Have you ever seen a tie plate rolled?

A. No.

X Q. 27. Do you know anything about the practical art of manufacturing a tie plate which would justify you in expressing an opinion as to whether or not certain forms of tie plate such, for example, as those shown in the Defendants' aluminum model exhibits, are or are not practical constructions with respect to their being rolled or otherwise fabricated?

A. I can only answer this question by stating that it is obvious to me, by reason of my general engineering training and experience, and my observation of rolling operations, such as the rolling of steel rails, for example, that certain forms of tie plate, here before me, could be rolled. As to certain other forms I would not be able to conclude from any information or experience which I have had, whether they could be rolled or not. For example, it is plain to me that the Goldie tie plate of patent 485,030, could be rolled, and so, also, could the Dunham plate and the plate of the Gould patent No. 280,030 and the Servis patent No. 524,868, and of the Wells patent,

586 No. 203,570, as well as Defendants' tie plate. The rolling of any article possessing the uniform and regular cross section of these various plates, and having the various grooves, ribs and flanges of the plates, both above and below, extending in the same direction, presents no difficulties.

On the other hand, I should be quite unable to form any conclusion as to whether it was practicable to roll such peculiarly shaped plates as those illustrated and described in the various Wolhaupter patents in suit, because of the irregularity of the sections which they present, especially in the case of the first two Wolhaupter patents, the tie plates of which are exemplified in Defendants' Exhibits O and O^1, because of the fact that the flanges on the under side of the plate, in the case of the third Wolhaupter patent, are shown as extending in a different direction from the grooves and shoulders on the upper side of the plate. Just so I would be unable to express any definite opinion as to whether the plate shown in Wolhaupter patent No. 579,509, could be rolled. The general conformation of this plate could undoubtedly be produced by rolling, but whether it would be practicable by a rolling operation to punch down the tie engaging projections which this plate discloses, as shown by Defendants' Exhibit O^{12}, for example, I am unable to form any definite conclusion.

So much in answer to your question as restricted to the manufacture of plates by rolling. When it comes to the question of the fabrication of plates otherwise than by rolling, it is of course obvious that any of these plates can be produced practically and commercially, although, of course, the expense of producing some of

them would be considerably greater than that of producing others, and might rule them out of the market on that account.

Adjourned to 2 o'clock P. M. of the same day.

587 December 23, 1909—2 o'clock p. m.

Met pursuant to adjournment.
Present as before.

HENRY W. CARTER resumed the stand.

Cross-examination by Mr. Brown continued as follows:

X Q. 28. Mr. Carter did you personally have anything to do with the manufacture or the construction of the aluminum model exhibits that have been introduced in evidence by the Defendants?

A. No.

X Q. 29. You have testified, as I recall your deposition, that these various exhibits illustrate and represent the various patents or figures in the drawings of the various patents which they severally purport to represent. Please state whether or not, in your opinion, each and all of these model exhibits are fair and accurate representations of the devices shown in the drawings of the patents to which they severally refer?

A. I think that each of these models is a fair and substantially accurate exemplification of the structure which it purports to represent.

X Q. 30. In the making of these various aluminum exhibits do you find that the same ratio of increase in size is preserved between the various parts of the structure shown in a given drawing with the model made to represent that structure of that drawing?

A. Yes, substantially so, with the exception that in one or two instances, and notably in the instance of the model of the Wells patent, Exhibit O[6], the plate is shown shorter than the drawings of the patent indicate. In such instances, however, the difference is solely one of length. That is to say, the cross section of the plate is uniform and remains unchanged, whether made longer or shorter, so that a short section of the plate discloses its essential construction as perfectly as a long section would. And this situation obtains in only one or two instances. Most of the models follow the proportions indicated by the drawing which it purports to represent, throughout. In fact, the instructions given with regard to the making of these exhibits, was to the effect that the drawing in
588 each instance should be followed with substantial fidelity, even as to apparently insignificant details.

X Q. 31. The first part of your last preceding answer is "Yes, substantially so;" just what do you mean by "substantially so"?

A. I mean that the models represent the structure pictured in the drawing which the model purports to exemplify, as exactly as the ordinary competent mechanic can be expected to follow a drawing. I would not undertake to say that the application of propor-

tional dividers to these drawings, on the one hand, and to the models on the other, would in each case disclose that the proportions of the drawing had been followed to the last possible nicety. But I do say that the model in each case is so accurate that it gives a substantially correct idea of the construction which the model purports to disclose—an idea which may be accepted as accurate for all practical purposes.

Of course, as a matter of fact, there is no point in such questioning. Any one who is at all familiar with the work of draughtsmen who are accustomed to make patent drawings, knows that they rarely attempt to make their drawings to scale, or to follow exact proportions in depicting the several parts of the device which they are illustrating. Nor is it of any consequence whatever whether they do or not. The patent is addressed to those skilled in the art, and it assumes that the mechanic who undertakes to follow the directions of the patent and the sketches of its drawings will use his own judgment in proportioning the parts to the duties which they have to perform, and to the particular material which he chooses to embody these parts in. All that can be expected therefore, from any model, is that it shall not exhibit such a gross departure from what the patent indicates, as to show a substantially or essentially different device—a device which will not operate in substantially the same manner to produce the same result which the device pictured in the patent would.

In the case in hand the models have gone further than was necessary in the matter of accuracy. They follow the patents with substantial fidelity even as to matters of insignificant detail and as to proportions which can not possibly be considered important from any point of view.

X Q. 32. Please look at the Dunham patent and the model, Defendants' Exhibit O^8, and state what proportion the model
589 bears as to its surface dimensions to the surface dimensions of the drawings of the patent.

A. Roughly speaking the model is three times the actual dimensions which the drawing indicates in its Fig. 3.

X Q. 33. Is that same scale of enlargement preserved in the model as to the total thickness of the plate, that is, the distance between the top bearing surface for the rail to rest on, and the bottom surface where the plate rests on the tie?

A. Yes.

X Q. 34. Is that same proportion preserved in the thickness of the metal?

A. I think so. Of course when it comes to such minute dimensions as the thickness of the metal indicated in the drawing of this patent, taking the drawing at its actual size, it is pretty difficult to speak with exactness. Apparently, however, the drawing would indicate, in its Fig. 2, a thickness of metal which measured on the drawing is approximately the thirty-second of an inch. And the thickness of the metal in the model of the Dunham plate, while it varies somewhat owing to the inaccuracies of the casting, will average about three thirty-seconds.

X Q. 35. Would you say that a plate rolled out of steel in the exact similitude of Defendants' Exhibit model O^8, would be a practical tie plate?

A. For some service, yes. For light rails and rolling stock there is no doubt about it. For heavy rails and rolling stock, I should expect the plate would be made larger and deeper, and of heavier metal.

X Q. 36. Please look carefully at the sides of the grooves both top and bottom, in Defendants' Exhibit O^8, and state whether or not the angles formed are the same as the angles in the corresponding parts shown in the Dunham patent?

A. I think they are. The indications of Figs. 1 and 2 of the drawings of the Dunham patent in this particular, however, are not quite the same. In Fig. 1 the upper and lower ridges or ribs are somewhat sharper than in Fig. 2, where they are shown more rounded. Of course, however, this is a mere accident of the illustration, for Fig. 2 is supposed to show the same plate which Fig. 1 shows. It simply goes to point out the fact that a draughtsman, in making such a drawing, will rarely stop to make the lines of his several views exactly alike in the matter of such details.

The aluminum model, Exhibit O^8, is, perhaps, a fair com-
590 promise between the two views, having its ridges a little more rounded and perhaps its sides a little more vertically angular than Fig. 1 indicates, and having its ridges a little less rounded and its sides—the sides of its corrugations—a little less vertically angular than Fig. 2 indicates.

X Q. 37. You measured the thickness of the plate in Defendants' Exhibit O^8, the Dunham patent, by an ordinary steel rule, did you not?

A. Yes.

X Q. 38. Please measure this model with a standard Brown & Sharp callipering device, which I now hand you and see if you can give us a little more accurately the exact thickness of the plate.

A. Without further commenting upon the absurdity of applying a micrometer calliper to a patent drawing or to a model purporting to substantially exemplify the construction illustrated in the drawing, I would state that the thickness of this metal along its lateral edges, where alone I am able to measure it with this instrument, seems to vary from about eighty-one-thousandths of an inch to one hundred and twenty-three one-thousandths of an inch, according to the point where the calliper is applied. There may be some even thicker and thinner places along these lateral edges, but these dimensions will probably indicate about the range of the thickness, which obviously varies considerably at different points.

X Q. 39. In view of the measurements that you have taken of this model what would you say should be the thickness of a corrugated steel plate made of the size of this model to represent this Dunham patent in order that the plate should be a practical plate adapted for use in the track?

A. I don't understand the bearing of the premises to this question. I don't see that the measurements which I have made at your

request would ever have to be taken in view, or ever would be taken in view in deciding how thick the metal for a practical tie plate of the design indicated by this patent would have to be. I believe it was Lincoln who suggested that the proper length for a man's legs was long enough to reach from his body to the ground, and it might similarly be suggested here that the proper thickness of metal for a corrugated tie plate such as Dunham discloses in his patent, is such a thickness as will support the weight which is brought to bear on it, and which would of course vary with the character of the traffic which the track for which the plate
591 was designed, was expected to carry. As to what this would need to be, in actual inches or fractions of an inch, I would not undertake to say. I will undertake to say, however, that it is a perfectly feasible proposition for any manufacturer of tie plates, familiar with the requirements of the service to which they are suggested, to roll corrugated plates in accordance with the disclosure of this Dunham patent, and answering perfectly to its specification and claims, which would be a perfectly practicable tie plate and abundantly equal to the service demanded of it.

For example, if we take an end view of the Wolhaupter plate exemplified by Defendants' Exhibit O, and assume that this plate should be planed off above and below so as to lease its essentially corrugated body portion without the sharpened depending flanges on its under side, on the one hand, or the up-standing end flanges which form the rail abutting shoulders on its upper side, on the other hand, it will be evident that the resulting plate, leaving out the question of its obliquely cut ends, will be substantially the same corrugated plate which the Dunham patent discloses, and will answer as perfectly to the specification and claim of the Dunham patent, as though it were made of the precise conformation and relative thickness of metal which happens to be indicated in the pictures of the patent drawing. And no one can for a moment doubt that any manufacturer of tie plates would be able to roll a plate of this suggested section.

Moreover, there is no requirement in the Dunham patent that the plate should be made of sheet steel or of sheet metal, or even that it should be rolled. Fig. 4 of the patent exemplified by Defendants' Exhibit O°, indicates obviously, a practicable form of plate which would not lend itself to being manufactured from sheet metal at all. It might be rolled from steel billets. Or it might be made of a malleable casting, as many tie plates on the market are. And the same is true of the through and through corrugated plate shown in the Figs. 1, 2 and 3 of the Dunham patent. This also could be rolled from a billet, or could be made of a malleable casting, the thickness of the metal being made such in every case as to enable that metal, considering its nature, to sustain the load which it is called upon to bear.

X O. 40. You have said in your last answer that it was perfectly feasible to roll a corrugated plate like the Dunham patent which would be a perfectly practicable tie plate and abundantly equal to

the service demanded of it. How do you know that to be
592 a fact—not the rolling of the plate, but the practicability and serviceability thereof?

Mr. Reed: Objected to on the ground that complainant having purchased and owned the Dunham patent it is estopped to deny the facility of the invention therein claimed.

A. Inasmuch as I am here solely as an opinion witness, this question would seem to be without point. In all of my answers concerning what would or would not be the case in any of these constructions, I am simply expressing my opinion as an engineer. I do not pretend to have had any actual experience with these devices, or to have made any tests with regard to them.

X Q. 41. You have repeatedly, in the course of your deposition, gone outside of your now chosen limitation as an engineer witness, and have expressed your opinion freely as to prior patents disclosing practical structures in alleged anticipation of the patent in suit, and in cross question 39, for example, you have stated that a corrugated rolled plate is a perfectly practicable tie plate that would not merely be equal to the service demanded of it, but would be "abundantly" equal to such service; having volunteered this opinion I now ask you on what fact you base the statement?

Mr. Reed: Objected to because the question is confined by its terms to a single fact and there may be more than one fact which the witness is acquainted with as the basis of his opinion. Also, as assuming a state of facts which is not divulged by the record.

A. The facts upon which my opinion with regard to the feasibility of a corrugated tie plate made in accordance with the disclosure of the Dunham patent, are first the structural characteristics which the Dunham patent indicates, and second, the physical characteristics of steel as the structural metal, as generally well known. Upon the basis of these facts it is my judgment as an engineer that beyond the possibility of a reasonable doubt, such a tie plate could be constructed of dimensions and proportions which would enable it to withstand any service for which it was designed and to abundantly support any weight to which it would ever be subjected in such service. The conclusion is just as obvious as is the conclusion that a steel building can be constructed with a framework strong enough to carry any desired load, from the lightest commercial service to the heaviest conceivable warehouse or mill service.

593 It will be understood that I express no opinion as to whether such a corrugated plate, made in accordance with the Dunham patent, would prove to be a desirable plate or an economical plate, as compared with other forms in which it might be possible to roll the same amount of metal. To judge of this point would require special information and experience in this special line, which I do not pretend to have. I merely state, and wish to emphatically repeat it as my deliberate opinion, that there is no question whatever but what it would be perfectly practicable to roll a steel tie plate of the corrugated form suggested, described and

claimed in the Dunham patent, which would be equal to any service which it was desired to put it to.

X Q. 42. Would it require "special information and experience in this particular line" to determine whether or not such a plate made as you have stated in conformity with the Dunham patent, would embed itself, that is, its under surface or projections, into the tie under the weight of the passing load?

A. No. It is inevitable that the weight of the passing load would embed such a plate in a wooden tie to a greater or less degree. The extent to which this would take place, however, is something which could not be well judged of without experience and information, and is something which no amount of experience and information, I would say, short of actual test and investigation with the particular plate itself, would enable any one to determine very accurately. It would depend upon too many uncertain conditions such as the character and hardness of the wood of the tie, the area of the plate, the number of its corrugations, the sharpness of their angle, the depth of these corrugations, the direction in which the corrugations were extended with respect to the wood of the tie, etc., etc.

X Q. 43. And you have made no such test, have you?

A. No.

X Q. 44. And do you think that the load that would be sufficient to press this Dunham tie plate, that is, its under portion, in whole or in part into the tie, would or would not tend to flatten or distort its upper surface?

A. It would inevitably tend to flatten or distort its upper surface. It would not flatten or distort its upper surface notwithstanding the tendency, if the plate was properly designed and made heavy enough for the service to which it was subjected. The very
594 object of making any structure, from a tie plate to a sky-scraper, heavy enough and of proper design, is to enable it to resist the tendency for it to be distorted and flattened by the load to which it is subjected.

X Q. 45. Take, for example, a Dunham tie plate designed as to size and shape precisely as in the model offered here in evidence as Defendants' Exhibit O^8 what thickness of metal should such a tie plate have, if made of steel, to be heavy enough for the service to which it would be subjected under, we will say first, a fifty pound rail and the ordinary service which such a rail would carry, and, second, under an eighty pound rail and such a service as an eighty pound rail would ordinarily be expected to carry?

A. I don't know. The metal would have to be thick enough to do the work. That is all I can say about it.

X Q. 46. Now, I believe you have said that the thickness of the metal of this aluminum model, Exhibit O^8, was substantially three thirty-seconds of an inch; suppose a tie plate was made like this model out of steel excepting that it was three-sixteenths of an inch thick, that is, double the thickness of the model, the other dimensions being as in the model, would you say that such a tie plate would stand ordinary wear and tear in track and be practical under the loads which are ordinarily placed upon tie plates in service?

A. I don't know whether it would or not.

X Q. 47. What is the heaviest load to which a tie plate is subjected in ordinary service, if you know?

A. I have no definite information. Locomotives weigh into the hundreds of tons, and although the weight of the locomotive is distributed among a number of wheels, the weight on each driver undoubtedly would be very great.

X Q. 48. In making a tie plate of the Dunham type like the aluminum model Exhibit O[8], for practical use in track, would you make it of steel or of other metal?

A. I think it could be practically made of steel or of malleable cast iron.

X Q. 49. Which of the two metals would, in your judgment, best withstand the weight and the tendency thereof to flatten or distort the upper surface of the plate if the latter was made like aluminum model Exhibit O[8]?

A. Either would do this perfectly if the plate was properly designed and made heavy enough for the intended service. As to whether a greater weight of metal would be required in the
595 one case or the other, however, I should say it would depend somewhat on the design of the plate, but that the steel plate would probably be the lighter one.

X Q. 50. You have qualified several of your answers in speaking of this Dunham corrugated plate like Exhibit O[8], by the expression "if the plate was properly designed and made heavy enough for the service to which it was subjected." What change of design other than the design shown in the Dunham patent did you have in mind, if any?

A. None.

X Q. 51. Can you state whether or not a plate made of the size and design of Defendants' aluminum model Exhibit O[8] would be heavy enough for service in track?

A. It would undoubtedly be heavy enough for service under light tracks such as those of some industrial railroads, and the like, where the rolling stock is much lighter than that ordinarily used on railways in this country. I should not expect that a plate made of steel but otherwise identical with the aluminum model Exhibit O[8], would be heavy enough to be placed under the rails of the ordinary steam railroad. For this service the plate would have to be made heavier, and designed with the particular load in view which the plate would have to carry. When I say "designed" I refer not only to the thickness of the metal, but to the number and dimensions of its corrugations, which would vary, I assume, with the thickness of metal employed, and perhaps with the character of the wood in the ties for which the plate was designed for use on.

X Q. 52. In thus redesigning the Dunham plate for the purposes mentioned in your last answer, I suppose you would have to bear in mind the crushing strain of a corrugated steel structure of that size and shape, would you not?

Mr. Reed: Objected to because the witness has not stated in his previous answer that the Dunham plate would be redesigned.

A. In designing any tie plate for the service for which it is particularly intended, the strength of the metal in the plate, and in the particular form which would be given it in that plate, would be a vital consideration. I doubt, however, if it would be considered as a theoretical matter at all. It would be determined, practically, in all probability, by trying different thicknesses of metal and then testing the plate, probably under actual service, until the thickness of metal had been determined upon which proved itself to
596 be sufficient for the service demanded.

The crushing strain of the metal, and its tensile strength, for the flattening of the plate, if it took place under the load, would test the tensile as well as the crushing strength of the metal would be vitally involved in the "cut and try" method suggested, but the probabilities are that the average manufacturer would not take it into consideration as a mathematical problem, although this might be done.

What I have here said with regard to the probable steps in the development of the Dunham plate to a form suitable for any particular service, is probably generally true of all tie plate structures. For example, the rather absurd form of plate shown in the second Wolhaupter patent would probably have to be developed into a plate of very different proportions from that which the patent shows and which are exemplified for example, by Defendants' Exhibit O[1]. The probabilities are, however, that in this development, if it ever took place, the ultimate dimensions and proportions of the parts of the plate would be determined by "cut and try" methods—by making plates of various dimensions and proportions and then seeing whether under service conditions the particular plate under test was sufficient for the service.

I would not regard this procedure, however, as properly called "re-designing." That word is not ordinarily used in referring to changes which are merely matters of proportion, thickness of stock, etc. If it is to be used in this connection and as your question uses it, it must be understood as referring simply to such changes in the accepted design disclosed in the Dunham patent, for example, as merely involve the thicknsss of metal, the number and depth of the corrugations, and other similar details which in the very nature of things must be left to the judgment of the mechanic. No patent pretends to express any exact limitation as to such matters of detail.

Whereupon an adjournment was taken to 10 o'clock a. m., December 24, 1909.

597 December 24, 1909—10 o'clock a. m.

Met pursuant to adjournment.
Present: Mr. Brown and Mr. Reed.

HENRY W. CARTER, resumed the stand for further cross-examination by Mr. Brown:

X Q. 53. Then I take it from your last answer that in order to determine the proper design of the Dunham type of tie plate, and

to have it heavy enough for the service to which it would be subjected, that you would have to take several things into consideration and take the various steps you have described, to "the development of the Dunham plate to a form suitable for any particular service." Do I understand you correctly?

A. No. What I have said is that I should expect in actual practice the development of the Dunham plate as to its relative dimensions would actually occur by the "cut and try" method such as I have suggested. This would not be necessary, however. Any competent engineer, accustomed to figure strains and stresses in structural iron work, could take this Dunham design and determine in advance the necessary thickness of metal, size of the plate, number of corrugations and their depth, etc. If the maker chose to avail himself of the services of such an engineer, he could proceed in this manner instead of by the "cut and try" method.

X Q. 54. And without the services of such an engineer, and without having made use of the "cut and try" method yourself you are unable to state precisely what size and thickness of plate, how many grooves and their shape or design must be used to make a tie plate of the type and as disclosed by this Dunham patent which would be a practical tie plate for use on a steam railroad, are you?

A. I do not myself possess the information regarding the actual condition of track construction and service, the qualities of the metal commercially usable for devices of this character, and other practical considerations which the tie plate maker must take into account, to enable me to tell what the precise dimensions, proportions, number of corrugations, etc., that such a plate would properly to meet any given condition of service.

X Q. 55. Then you can not, from the patent itself, and merely from the patent, tell what dimensions and proportions would
598 be required to make a practical tie plate of the kind shown in the Dunham patent 469,386, can you?

A. Yes, the Dunham tie plate, exactly as illustrated, is a practical tie plate for very light service. Neither in the case of the Dunham patent nor in the case of any of these tie plate patents, however, is it possible from the patent itself to determine the exact proportions and dimensions of plate necessary to make it a practically satisfactory plate for a specified character of service and weight of traffic.

X Q. 56. Now, although the Dunham patent shows the corrugated metal in the patent drawing as about a thirty-second of an inch thick, and the aluminum model, Exhibit O[8], which you say is about three times the size of the patent drawing, shows the metal in some places a little less and in some places a little more than three thirty-seconds of an inch thick (varying as you have said between eighty-one-thousandths and one hundred twenty-three-one-thousandths) the specification beginning in line 55, suggests that the patentee has had experience with a corrugated plate three-sixteenths of an inch thick, and intimates that that is a proper thickness for the metal. In view of these suggestions I would like to ask whether, in your opinion, a tie plate, made of steel three-sixteenths of an inch

thick but otherwise as illustrated in the Dunham patent, would be a practical tie plate for use on steam railroads?

A. I find no statement in the Dunham patent which amounts in any way to a recognition of any particular thickness of metal, as the proper thickness for the plate set forth in the patent. The only reference I find to any particular thickness of metal is as follows:

"I have found by experience that a corrugated plate three-sixteenths of an inch thick would be stiffer and better adapted to resist the bending or buckling strain to which it is subjected by the weight of the rolling stock than a flat plate which is five-eighths of an inch thick."

I do not know whether three-sixteenths of an inch would be sufficient for the thickness of the metal which ought to be used in the plate shown and described in the Dunham patent, in order to adapt it to resist the strains to which it would be subjected in ordinary service on a steam railroad.

X Q. 57. Do you find in the specification of the Dunham patent any suggestion that the under portion of the plate forming the under corrugations, should be more or less sharpened so that the plate would the better enter the tie?

A. I do not find any statement in the Dunham specifica-
599 tion to that effect. I simply observe that in the drawing these under corrugations are "more or less sharpened," and realize that of necessity they will enter the tie to a greater or less depth.

X Q. 58. Well, if these under corrugations enter the tie under the weight of the passing loads, in service, would not that defeat the declared purpose of the Dunham invention as claimed namely, to form air ducts between the surface of the plate and the tie? In other words, would not the air ducts be substantially closed when the corrugations were forced into the tie?

A. That would obviously depend upon how far the corrugations were forced into the tie. If they should sink into the tie their full depth the air ducts would, of course, be closed, and the contemplation of the patentee in this respect would then, apparently, be defeated. The first mentioned advantage specified by the patentee as resulting from his construction, however, would still remain, this being

"first, the corrugations practically reinforce the metal of the plate to such an extent that a much thinner and lighter plate can be used than if the plate were flat."

I would further point out, in this connection, also that we are not here concerned with the question of whether or not the Dunham plate, disclosed in this patent, would accomplish what the patentee hoped or intended to have accomplished, or not. The importance of the device in this comparison is simply as to the physical structure which is actually disclosed, the comparison being as between the physical structure as actually disclosed and the claims of the patents in suit.

X Q. 59. Do you mean disclosed only by the patent drawing or disclosed by the entire patent?

A. I mean disclosed by the entire patent, considered as a complete document.

X Q. 60. Mr. Carter, in making a tie plate out of steel of the Dunham type, the plate being say three-sixteenths of an inch thick, would you have the same number of corrugations to a plate of the area of the aluminum model O^8, as shown in the Dunham patent, or not?

A. I should say not. The increased thickness of the metal would necessarily result, I should say, either in a larger plate than Exhibit O^8, or one having less number of corrugations than this particular plate, which is like the drawing, has.

X Q. 61. And if such a plate had fewer corrugations the angles formed by the sides of the corrugations or grooves or spaces,
600 would be different from the angle shown in the patent would they not?

A. They might or might not be. If the depth of the plate was maintained the same as Exhibit O^8 indicates—I mean the vertical distance between the extreme upper and lower surfaces of the plate, increasing the thickness of the metal, would necessarily flatten the corrugations and make the angles less abrupt. The angles might be maintained the same by increasing the depth of the plate.

X Q. 62. I believe you have stated that you have cited this Dunham patent specially as a reference to the first Wolhaupter patent in suit. Do you intend it to be understood as having any bearing upon the second or the third Wolhaupter patents in suit?

A. Yes. Inasmuch as a plate of this construction might perfectly well be used with its corrugations running longitudinally of the rail, or "transversely," within the meaning of this term as employed in the claims of the last Wolhaupter patent in issue, I consider it a complete disclosure of that feature of these claims expressed as "a tie plate provided in its rail supporting surface with transverse grooves or channels."

X Q. 63. Then I understand, from your answer to X Q. 62, that you do not cite the Dunham patent in anticipation of either of the claims sued upon in the second Wolhaupter patent in suit, and only cite it to the one feature that you have mentioned of the claims of the third Wolhaupter patent in suit, and not to the entire claims in suit of said third Wolhaupter patent; is that understanding correct?

A. Yes, as to the second Wolhaupter patent. As to the third Wolhaupter patent I consider this Dunham patent a complete anticipation, since while it does not show the rail abutting shoulder, which is the only other feature of these claims besides the transverse grooves, the provision or -mission of such rail abutting shoulder is entirely a matter of choice on the part of the mechanic, and is completely indicated as such by the specification of the third Wolhaupter patent in which it is referred to as merely a "may be desirable" feature, its presence or absence having no bearing whatever on the presence or absence of the transverse grooves, and the fact that Dunham does not disclose such a shoulder I deem to be immaterial for this reason.

X Q. 64. Nor does the Dunham patent suggest a shoulder does it?

A. No.

601 X Q. 65. Referring to Defendants' Exhibit Wootten Patent, No 66,437, stated to be for an improvement in railway chairs, do I understand you to take the position that the device of this patent can be used as a tie plate?

A. Yes. More than that, that it is used as a tie plate, and that while it serves as a rail joint, it also serves to protect the wood of the tie from the wear of the rail and to distribute this wear upon the tie, as well as to hold the track in gauge by holding the rail between abutting shoulders on its upper surface while it engages the tie by its depending under flange.

I would not, of course, undertake to say that this Wootten device is adapted for general service as an ordinary tie plate, because its peculiarities make it special to the joining of rails, as illustrated. And for this reason I have preferred not to specially mention it in my comparison between the prior art and the patents in suit. Nevertheless, it is actually a tie plate and possesses the essential characteristics of such a plate, as above stated, notwithstanding that it is also something more than an ordinary tie plate, and for this reason would have to be confined in service to particular situations.

X Q. 66. What are "the essential characteristics" of a tie plate?

A. A tie plate is essentially a metal insert—a plate—slipped in between the rail and the tie to protect the tie from the wear of the rail and to distribute the pressure of the load on the rail over a wider surface of the tie so as to reduce the tendency to crush the fibre of the wood. Desirably and in its more complete forms the tie plate will also assist in holding the track in gauge, by tying the spikes together and so utilizing the strength of both the inner and outer spikes in resisting the tendency for the rail to be pushed outward by the flanges of the wheels, and by affording, in some cases, a shoulder for the rail to abut against.

Originally, or in the first instance, a tie plate was probably nothing but a flat piece of iron, like that shown, for example, in the Servis patent No. 249,407, of November 8, 1881, but without the tie-engaging rib or flange with which the plate here illustrated is provided. In this form the plate might or might not have spike holes. It is shown both ways in this Servis patent. By subsequent developments tie plates have come to be provided, in some cases, with depending under ribs, flanges, or projections to engage the wood, and in other cases with corrugated or grooved upper surfaces

602 with or without shoulders for engaging the edge of the rail.

Tie plates having absolutely flat and smooth under or upper surfaces, however, are still common, as are tie plates devoid of shoulders for engaging the edge of the rail.

The question of what characteristics are essential in tie plate construction, is therefore one which depends on the ideas of the user, very largely. I believe, however, that I have mentioned the several essentials, or rather the several characteristics which are peculiar to these constructions, which are sometimes employed altogether, and sometimes not.

X Q. 67. Do you think it is essential that the tie plate should

be fastened to the tie so that whatever pounding or grinding action is induced by the wave motion or vertical motion of the passing train shall occur between the rail and the tie plate, rather than between the tie plate and the tie?

A. I should consider it highly desirable to have the tie plate fastened securely to the tie. The natural tendency, however, is for the plate to lie closely upon the wood upon which it rests, rather than move with the rail which rests upon it, and I would not say that it was absolutely necessary to have the tie plate fastened tightly to the tie in order to locate the wear between the tie plate and rail, instead of between the tie plate and tie.

X Q. 68. If the tie plate or metal "insert" as you have expressed it, should be securely bolted to or be so a part of the rail structure as to move with the latter under the influence of the passing load, would not the tendency be to have the plate or "insert" pound upon and wear out the tie rather than to have the wear located between the rail and said plate or metal "insert"?

A. Obviously so.

X Q. 69. Referring again to the Wootten patent, No. 66,437, the joint chair there illustrated and described is shown adjacent to the abutting ends of two rails, A, A, is it not?

A. Yes.

X Q. 70. And the ends of the chair-joint are shown as supported upon the two adjacent ties or "sleepers" as the patent calls them, are they not?

A. Yes.

X Q. 71. Is there any indication in the patent or its drawings as to the manner of using this chair-joint or any part of it upon the intermediate ties or sleepers, B, B, that is, those ties between the ends of a rail?

A. I don't know. This patent does not interest me sufficiently to cause me to read it. I should not have voluntarily referred to it in this connection.

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X Q. 72. How could the device of this patent be used as a tie plate?

A. Looking at the cross section shown in Fig. 4, it will be observed that the lip *d*, is a malleable lip which is originally bent up vertically to receive the rail and is then closed down over the edge of the rail. When this lip was opened, therefore, it would enable a rail to be placed on the plate anywhere along its length, and the under flange *b*, of the plate, would obviously be sunk into any tie, without regard to the question of whether the rails were to be jointed at or adjacent to that tie or not. If seated thus in a single tie, and used thus to support the rail, the malleable lip *d* may subsequently close down upon the rail, as stated, the device would be used and would be operating as an ordinary tie plate, and yet without any change whatever in its structure.

Of course I do not mean to say, as I before explained, that this would be a desirable or practicable form of tie plate for ordinary use. I simply point out that it has the characteristics of a tie plate, and is capable of being used as such, notwithstanding that it pos-

sesses other features which would practically confine it to the particular service intended.

X Q. 73. But in using this chair-joint for a tie plate on the intermediate ties, would you have it the same length as is shown where it is used for a chair coupling proper?

A. Its length would not interfere with the possibility of its being so used. As I above stated, this use would not necessarily require any change whatever in the construction over what is here shown. Obviously however, if it was desired to employ the Wootten design of railroad chair as an ordinary tie plate, it would be shortened to the width at least, of the tie. It would simply be a waste of metal to leave the ends projecting, as they otherwise would, over the sides of the tie.

X Q. 74. And in shortening this chair to the width of the tie, would you utilize or omit the bolts or rivets *f, f* in the drawing, by which the rail chair is secured to the rail?

A. I would omit these bolts as superfluous.

X Q. 75. Do I understand that you do not consider this Wootten patent No. 66,437, as anticipating either of the claims of either of the three Wolhaupter patents in suit?

A. No, you may understand, from my failure to refer to this patent, merely that I find so many closer approximations to
604 the construction of the patents in suit, that I deem it superfluous to consider it in connection with the claims in issue.

X Q. 76. But in your opinion is the Wootten patent, or is it not, an anticipation of either of the claims of either of the three Wolhaupter patents in suit?

A. In my opinion it is an anticipation of each of the claims of each of the three Wolhaupter patents in suit, if these claims are to be considered broad enough to cover such a radically different construction from anything which Wolhaupter shows, as Defendants' tie plate is. In other words, in my judgment, this Wootten patent discloses a structure which is as nearly that described and claimed by Wolhaupter in each of the three patents in suit, as Defendants' construction is. Defendant follows the disclosure of this Wootten patent rather than the disclosures of the Wolhaupter patents in suit.

Whereupon an adjournment was taken to Wednesday, December 29, at 10 o'clock A. M.

December 29, 1909—10 o'clock a. m.

By agreement, an adjournment was taken to December 30, 1909, at 10 o'clock A. M.

December 30, 1909—10 o'clock a. m.

Met pursuant to agreement.
Present as before, Mr. Brown and Mr. Reed.

HENRY W. CARTER resumed the stand for further cross-examination by Mr. Brown.

X Q. 77. Please look again at the Defendants' Exhibit Patent to Gregory, No. 93,875, and state whether or not this patent, in your judgment, discloses or suggests the construction covered by the claims in suit in either of the three Wolhaupter patents in suit?

A. No.

X Q. 78. What bearing, if any, upon either of the three patents in suit, has the Roosevelt patent, No. 124,856?

A. I don't see that it has any.

X Q. 79. Please look at Defendants' Exhibit Servis patent No 249,407. This patent shows a tie plate that has a perfectly
605 flat and unbroken upper surface on which the rail rests, does it not?

A. Yes.

X Q. 80. Is there anything in the patent or the drawings thereof to suggest top flanges and spaces or grooves between such flanges on the upper surface of the plate?

A. No.

X Q. 81. To which patent of the three Wolhaupter patents in suit do you cite this Servis patent and, briefly, for what purpose?

A. I refer to this Servis patent principally for the purpose of showing that tie plates were employed with or without spike holes, as desired. It also shows that as early as 1881 it was customary to provide tie plates with depending flanges for penetrating the wood of the tie, to more firmly hold the tie plate in place. Also that such flanges might be sharpened or left blunt, as desired, and might be provided either single or in pairs on the plate.

I should not consider this Servis patent as pertinent to one of the Wolhaupter patents in suit, rather than another. In a general way it is pertinent to all of them.

X Q. 82. Is there anything in Defendants' Exhibit Re-issue patent No. 10,302, to Servis, that would require you to modify your last answer in any way?

A. No, I think the structure shown in these two patents is identical.

X Q. 83. Please look at Defendants' Exhibit Servis Patent 294,816, and state which of the Wolhaupter patents in suit you think this Servis patent is an anticipation of?

A. This Servis patent simply shows another form of flanged tie plate applied to the tie between spikes, and not provided with any spike holes. I should not consider this patent as in itself, anticipating either of the patents in suit.

X Q. 84. Please look at the Servis patent No. 524,868, and state whether or not in your opinion it is an anticipation of either of the three Wolhaupter patents in suit?

A. Considering the Wolhaupter tie plate as actually disclosed, illustrated and described in the patents in suit, I should not regard either of them as anticipated by this Servis tie plate of patent No. 524,868. In my judgment, however, this Servis plate is a closer approximation to Defendants' tie plate than is anything which is disclosed in either of these Wolhaupter patents, and I regard it
606 as anticipating each of the claims in issue, if these claims are viewed broadly enough to include Defendants' structure. The fact that the rail-supporting surface of this plate between its abutting shoulder d^3, is shown flat throughout, instead of being put away at intervals by longitudinal grooves, would seem to be immaterial. The cutting away of superfluous metal in any structure is obviously a matter wholly within the choice and judgment of the mechanic. It is common in mechanical practice throughout the mechanic arts.

X Q. 85. Do you find anything in the Servis patent No. 524,868, relating to the cutting away of the top surface of the plate for the purpose indicated in your last answer, or suggesting where and in what direction the cut away portion or groove should extend?

A. No.

X Q. 86. Please look at Defendants' Exhibit Gould Patent No. 280,030, and state to which one of the three Wolhaupter patents in suit, and the claims thereof in suit, you think, if you do, it has special reference as an anticipation?

A. The tie plate of this Gould patent, for it is essentially a tie plate, although called a "joint," is pertinent because of its resemblance to Defendants' structure, rather than because of its resemblance to either of the tie plates illustrated in the Wolhaupter patents in suit. I consider it a complete anticipation, however, of the claims of the three Wolhaupter patents in suit, in any view of these claims which makes them applicable to Defendants' tie plate.

To better show to the Court the exact nature of the tie plate structure which this Gould patent No. 280,038 sets forth I have had constructed and here produce an aluminum model of the plate, following more particularly that form of it shown in Figs. 5 and 6. This model I will ask the Examiner to mark "Exhibit O^{20}." It is a substantially correct exemplification of the plate structure shown in Figs. 5 and 6 of this patent, as stated.

This plate is illustrated in the patent as employed in connection with a rail, having longitudinal ribs on its under side to fit into the longitudinal grooves in the upper side of the plate. Obviously, however, an ordinary flat bottomed rail could perfectly well be seated on this plate, exactly as it stands.

X Q. 87. What does this patent disclose to be the subject, and purpose of the two "V" shaped grooves lettered *b*, on either side of the sunken panel, *g*?

607 A. The object of these grooves is to receive the ribs on the under side of the rail, as I have just above suggested.

X Q. 88. What is the purpose of the sunken panel *g*?

A. There is no sunken panel in the plate, shown in Figs 5 and 6. The so-called panel *g*, is in the rail, and its object is to permit of

the insertion of a rubber plate or cushion between the under surface of the rail and the supporting or upper surface of the plate.

X Q. 89. And this rubber cushion is the dark part of the drawings Figures 4 and 5, to which the reference letter *f*, *if* applied, and which is also shown in plain view in Fig. 6, is it not?

A. Yes, and also in Fig 3, where no tie plate is used, the cushion being here inserted directly between the rail and tie.

X Q. 90. Please look at Defendants' Exhibit Fisher Patent No. 313,067, for rail joint. Explain how this joint could be used as a tie plate, if it can be so used.

A. The device shown in the Fisher patent referred to is not well adapted for use as an ordinary tie plate, although it could be so used, if desired. In that case the "U" shaped bolt D, with its nuts E′, and wedge blocks C, C′, would be discarded. Substantially the same device is shown in the Fisher patent No. 360,673, of April 5, 1887, and Fig 1 of this patent shows clearly that a rail could be supported at any point along its length, upon this plate, if so desired. If used as a tie plate, simply, its ends would naturally be cut off as superfluous. As shown, they would protect beyond the limits of a single tie, if the plate was applied to a single tie, as an ordinary tie plate is.

Because the device shown in this Fisher patent is not well adapted for use as an ordinary tie plate, although possessing many of the characteristics of such plate, I have not heretofore referred to it, and would not voluntarily have done so.

X Q. 91. I suppose your last answer would be substantially repeated if I should repeat my last question as applied to Defendants' Fisher patent 360,673, would it?

A. Yes.

X Q. 92. Each of these Fisher patents for rail joint, shows "sole-piece, bridge or chair," lettered A, in the drawing of each patent, resting at each end upon the upper surfaces of adjacent ties, and spanning the distance between them, do they not?

608 A. Yes.

X Q. 93. Then as I understand you, neither of these two Fisher patents discloses an anticipation of either of the claims in suit of either of the three Wolhaupter patents in suit; is that correct?

A. I should not voluntarily have referred to it as such, although I must say that to may mind these Fisher patents disclose a device which is just about as close to the devices of the three Wolhaupter patents in suit, as these devices are to Defendants' tie plate.

X Q. 94. Do you contend that Defendants' Trude patent No. 329,867, is an anticipation of either of the three Wolhaupter patents in suit?

A. I have not mentioned the Trude patent. I have not even read it.

X Q. 95. Construing your answer to be "No" to my last question, I ask you if the Trude patent discloses any other resemblance to the tie plate illustrated in either of the three Wolhaupter patents than that it is a metallic plate interposed between the rail and the tie?

A. I take it from your question that notwithstanding the fact

that I have given this patent no consideration in my direct examination, and have not even mentioned it heretofore, you desire me to consider its structure for the purpose of comparing it with the device of the Wolhaupter patents in suit, to the extent mentioned in your question.

Examining the devices shown in this Trude patent, accordingly, I find that they include various forms of tie plate, used in connection with a sort of "clasp" C, which extends up through holes in the plate and is bent over the edges of the rail base to fasten it down.

Answering your last question specifically, I do not find that these Trude devices disclose any close resemblance to the tie plate illustrated in either of the three Wolhaupter patents in suit. It does resemble them in the general respect that it is a metallic plate interposed between the rail and tie, as you state, and in my judgment this resemblance is quite as close as the resemblance which exists between Defendants' tie plate and either of the Wolhaupter devices, disclosed in the patents in suit.

X Q. 96. Please look at Defendants' Exhibit Currier Patent No. 379,210, and state which of the three Wolhaupter patents in suit it is an anticipation of, in your opinion, if at all.

609 A. This Currier tie plate, or wear-plate, does not particularly resemble the devices of either of the Wolhaupter patents in suit, but resembles them, in my judgment, more closely than Defendants' tie plate does. In any view of the claims of either of these Wolhaupter patents in suit which would render these claims applicable to Defendants' tie plate, I should regard them as substantially anticipated by the plate of this Currier patent.

X Q. 97. Please look at Defendants' Exhibit Cote patent No. 387,399, for railway chair, and state whether or not this device could be used as a tie plate.

A. No.

X Q. 98. State whether or not this Cote patent, in your opinion, is an anticipation of either of the claims of the Wolhaupter patents in suit?

A. No.

X Q. 99. Please look at Defendants' Exhibit Davies patent No. 421,678, and state whether or not, in your opinion, this is an anticipation of either of the claims of the Wolhaupter patents in suit?

A. Yes, all of them, in any view of these claims which renders them applicable to Defendants' tie plate. The supplying of the upper surface of the plate with one or more rail-abutting shoulders, and the cutting away of the surface to remove surplus metal, if desired, is a matter of ordinary mechanical skill and judgment, open to any mechanic and no distinction can therefore be predicated, in my judgment, upon the fact that the upper surface of this Davies plate is left perfectly flat.

Of course, if the claims of the patents in suit are regarded as calling for the particular tie plate structures illustrated and described by Wolhaupter, the situation is different, for the Davies plate is obviously unlike the Wolhaupter tie plate thus illustrated and de-

scribed. In such limited view of the claims I would not regard them as anticipated by Davies.

X Q. 100. Please look at Defendants' Exhibit Kennish patent No. 462,357, protector for the ends of beams, and state what use, if any, it has by way of anticipation or otherwise with respect to either of the three Wolhaupter patents in suit?

A. The only bearing that this Kennish patent has on the Wolhaupter patents in suit, so far as I can see, is that it shows that it was old in other mechanic arts to make iron plates, intended
610 to bear against wooden beams, with ribbed or flanged surfaces for engaging the beams.

X Q. 101. Please look at Defendants' Exhibit Heath patent No. 474,129, rail joint, and state whether or not this device could be used as a tie plate and if so, how?

A. No, it could not be used as an ordinary tie plate without discarding a number of features of its construction. It however, discloses certain characteristics of a tie plate, as it will be more particularly evident from Fig. 5, and the patent states that it combines the "qualities of a tie-plate, rail-chair, truss-joint, fish-plate, angle-bar, and rail fastening."

X Q. 102. Please state whether or not the rail joint device as illustrated in the Heath patent, has any bearing by way of anticipation or otherwise upon either of the Wolhaupter patents in suit, and if so what?

A. The only bearing which it has, so far as I can see, is that it shows how closely related these various devices used in such constructions are, to-wit, the "tie-plate, rail-chairs, truss-joint, fish-plate, angle-bar and rail-fastening."

Mr. Reed: Counsel for defendants introduce in evidence the aluminum model referred to by the witness as "Exhibit O^{20}, illustrative of Figs. 5 and 6 of Letters Patent to Gould, No. 280,030."

Mr. Brown: Complainant's counsel objects to the introduction of said aluminum model exhibit as irrelevant, immaterial, and also incompetent because not being a fair illustration of the disclosure of the Gould patent.

Whereupon an adjournment was taken to December 31, 1909, at 10 o'clock A. M.

December 31, 1909—10 o'clock a. m.

Met pursuant to adjournment.

Present: Mr. Brown and Mr. Reed.

HENRY W. CARTER, resumed the stand for further cross-examination by Mr. Brown.

X Q. 103. Please look at the Defendants' Exhibit Harris patent No. 514,828, and the Morrell patent, No. 531,637, and state whether or not these are flat topped tie plates and whether or not in your opinion, they anticipate either of the claims in suit of the Wolhaupter patents in suit?

611 A. Yes, both of these patents show tie plates, the rail-supporting surface of which is flat in each instance, the plate being simply provided on its upper side with a rail-engaging shoulder or shoulders.

Either of these patents, however, I regard as at least as close an approximation to the tie plates of the Wolhaupter patents in suit, as Defendants' tie plate can possibly be regarded as being, and as an anticipation of the claims of these patents in any view of these claims which renders them applicable to Defendants' tie plate. In view of the common practice of forming grooves or channels in the upper surface of such plates, whenever desired, and of the still commoner practice of cutting away surplus metal in any structure, wherever deemed advisable, the fact that Harris and Morrell show the rail-supporting surface of their plates as a flat, unbroken surface, I regard as quite immaterial. Either of these plates would obviously be substantially the same plate if its rail supporting surface was grooved or channeled, and it would obviously be open to either Harris or Morrell to groove or channel the rail-supporting surface of his plate, if he saw fit, as an ordinary mechanical expedient.

X Q. 104. Please look at Defendants' Exhibits Stewart patent 535,963, and the Chamberlain patent 538,817, and Weed patent 566,828, and state whether or not either of these patents, in your opinion, is an anticipation of either of the relied upon claims of either of the three Wolhaupter patents in suit?

A. Each of them I regard as an anticipation of each of the Wolhaupter claims, in any view of these claims which would include Defendants' tie plate, within their purview. In other words, each of them shows a tie plate which, while noticeably different from the tie plate actually disclosed and illustrated in either of these Wolhaupter patents, is not more remote from it than Defendants' tie plate is.

X Q. 105. Please look at Defendants' Exhibits Tillinghast patent, 584,248, and state whether or not this patent in your opinion, anticipates either of the claims of the Wolhaupter patents in suit?

A. Yes, all of them, in any view of these claims which would render them applicable to Defendants' tie plate. This Tillinghast tie plate, is obviously, a closer approximation to what Wolhaupter has shown in his patents in suit, especially in his second patent in suit, than Defendants' tie plate.

612. X Q. 106. Please look at the rail chair patent Exhibit No. 584,603, to Richards, and state which of the Wolhaupter patents in suit it is an anticipation of, in your opinion, if at all?

A. It is an anticipation of each of them, if Defendants' tie plate is to be regarded as included within the language of their claims. Again it is obvious that this Richards tie plate is a much closer approximation to Defendants' tie plate than is any construction disclosed in the Wolhaupter patents in suit.

X Q. 107. Please look at Defendants' Exhibits Harris patent No. 603,563; Morrison, No. 622,965, and Kinney and Trueblood, No. 631,873, and state whether any of these patents, in your opinion, anticipate any of the claims of the Wolhaupter patents in suit?

A. The device of each of these patents I believe to be a closer approximation to Defendants' tie plate than anything either of the Wolhaupter patents in suit discloses. It is certainly not more remote from the Wolhaupter tie plate or either of them than Defendants' tie plate is. In any view of the claims of the patents in suit which would render them applicable to Defendants' tie plate, therefore, I should regard them as equally answered to by the devices of these patents, mentioned in your question, in view of the common practice of cutting away surplus metal wherever desired in order to lighten mechanical structures of all kinds, and specifically of the common practice of channeling or grooving rail-supporting surfaces of such plates to lighten them and to afford channels for the escape of sand and moisture from beneath the rail (assuming that this amounts to anything in practice).

Of course, when it comes to the question of anticipation, the date of the disclosure must be considered in comparison with the dates of the Wolhaupter patents, and on this point I express no opinion as it is a question of fact to be determined by the record or by other evidence, with which I have nothing to do. This qualification should also have accompanied each of my last several answers, in which my comparison has always been limited to the mechanical aspects of the situation, and has not taken dates into consideration at all. Some of the patents mentioned in this morning's session I not to be subsequent in date to the first Wolhaupter patent, and the memo-
613 randum of the filing date found on the second Wolhaupter patent, but all of this is evident from the face of the papers and needs no comment from me.

X Q. 108. Please look at the Hanna patent exhibit No. 636,982, and state what bearing if any it has upon either of the three Wolhaupter patents in suit.

A. I do not see that it has any except as an example of the common practice of corrugating metallic structures whenever and wherever desired. In this case the corrugations are provided for the purpose of forming air spaces between the metallic structure and the wooden beam which it is designed to carry.

The base plate 10*a* of the modified construction shown in Fig. 4 of this Hanna patent, which base plate is described as separable from the rest of the structure, would obviously serve as a tie plate, if made of proper size, and would afford a supporting surface for the rail having grooves or channels in it, just like those of Defendants' tie plate.

X Q. 109. Could either of the rail joints disclosed in Defendants' Exhibit patent to Cloud, 592,865, and to Anderson, 700,714, be used as a tie plate? If so, how?

A. The base plate of the rail joint shown in the Cloud patent could be used as a tie plate, if made of proper size, although it would obviously be not particularly well adapted for service as an ordinary tie plate. In the construction shown by Cloud, however, this base acts in effect as a tie plate in intervening between the bottom of the rail and the top of the tie so as to protect the wood of the tie.

In the Anderson patent, also, the base plate of the rail joint, as

here disclosed, serves, in effect, as a tie plate, and like many ordinary tie plates, is provided with a shoulder *h*, and with longitudinal channels in its rail supporting surface, I mean longitudinal with respect to the rail, or transverse with respect to the tie. Owing to its generally convex bottom, however, this base plate would not be well adapted for use as an ordinary tie plate.

X Q. 110. How do you get your information that the base plate of the Cloud rail joint intervenes between the bottom of the rail and the top of the tie so as to protect the wood of the tie. Does it in fact rest upon the tie at any point immediately beneath the devices which constitute the rail joint?

A. Obviously not, since the rail is jointed between the ties.

X Q. 111. How would this base plate of the Cloud rail joint
614 be used as a tie plate beneath the rail upon ties other than those immediately adjacent to the ends of the rail, that is, upon what we call the intermediate ties?

A. A glance at Fig. 7 of the Cloud drawing would show that the base plate here illustrated might, if desired, be laid on any tie, longitudinally with the tie, so as to serve as a wear plate or tie plate for supporting the rail. And the same would obviously be true of the base plate in the form shown in Figs. 3 and 4, the depending flanges B^s, in this case being forced into the wood of the tie parallel with its grain, like the flanges of the Wolhaupter tie plates of the patents in suit.

X Q. 112. What bearing, if any, have the Defendants' Exhibits Patent No. 649,629, to Charlton, and 662,850, to Avery upon the claims of either of the Wolhaupter patents in suit, by way of anticipation, if at all?

A. The tie plate of the Charlton patent is certainly a much closer approximation to Defendants' tie plate, than anything which is disclosed in either of the Wolhaupter patents in suit is. It even has its upper or rail supporting surface grooved at 13, "to gather therein the sand that accumulates on the top of the plate, and permit of its escape or removal from the plate." Disregarding the question of dates, I should say that this Charlton tie plate answered to the substance of either of the claims in either of the Wolhaupter patents in issue, in any view of these claims which would include Defendants' tie plate within their definitions.

The same conclusion is true also, of the Avery tie plate, which again even discloses the grooves or channels L, in the upper or rail bearing surface of the plate for draining off the moisture.

X Q. 113. What have you got to say about the bearing of the earlier Avery patent 574,773, upon the three Wolhaupter patents in suit?

A. The same thing.

X Q. 114. Please look at Defendants' Exhibit Dockstader patent for lock rail joint, No. 462,399; do you consider this a rail "tie plate device"?

A. No, although its base plate portion is very analogous to a tie plate.

X Q. 115. This lock rail joint of the Dockstader patent is adapted

primarily for use at the adjacent ends of rails to join their abutting ends together, is it not?

A. Yes.

615 X Q. 116. And if one of these devices was so used in track to lock or join the rail ends together, it would not be possible, after the track was thus laid would it, to insert other of these Dockstader lock joints between the rail and the ties on the intermediate ties?

A. No.

X Q. 117. The aluminum Exhibit O', is intended to illustrate the construction shown in Fig. 5 of this patent, is it not?

A. More particularly, yes. Figs. 1, 2 and 3 go with Fig. 5, however.

X Q. 118. Please look at Defendants' Exhibit Hane patent No. 481,171, for railroad joint, and state what bearing, if any, it has upon either of the three Wolhaupter patents in suit, by way of anticipation or otherwise?

A. No particular bearing. It simply shows another example of rail joint construction, including a base plate which in some respects acts like a tie plate, and may similarly intervene between the rail and the tie.

X Q. 119. Now please turn to the Goldie patent offered by Defendants, No. 426,530, and state to which of the Wolhaupter patents in suit you have cited this Goldie patent.

A. I do not remember that I have cited it at all. If I did, I probably referred to it as showing a tie plate much more like Defendants' tie plate than anything in the Wolhaupter patents in suit, or either of them.

X Q. 120. The top surface of this Goldie rail chair, where it receives the base flange of the rail, is flat and unbroken, is it not?

A. It is so shown, yes.

X Q. 121. The under surface of this Goldie tie plate is not provided with under flanges is it?

A. It is provided with under ribs, q. As to whether these would be called flanges or not is simply a matter of definition to be attached to the latter term. If the ribs on the under side of Defendants' tie plates are flanges, as Complainants contend, then I should say that these ribs on the Goldie plate would be flanges, in the same sense. These ribs or flanges q, are described in the Goldie specification in the paragraph beginning at line 28 of page 2.

X Q. 122. Would you say that these stiffening ribs q, q, were more or less sharpened and as such adapted to penetrate and cut into the tie?

616 A. They undoubtedly would penetrate the tie to the extent of their shallow depth, under the weight of the traffic. No one would ever think of referring to these ribs as "sharpened," but as I have already pointed out, the term "more or less," when used to qualify the term "sharpened," leaves the latter so wholly indefinite that almost anything could be said to be described by it, provided it possesses the function of sinking into the wood, and these ribs, undoubtedly, do possess that function and capacity.

As I have already pointed out, it makes no particular difference, when the under rib is made very small and shallow, like the under ribs of Defendants' tie plates, for example, it ceases to be of any importance whether the rib is sharpened or not. It is bound to be forced into the wood to the extent of its shallow depth, in any case, and it is better that it should simply compress the fibre and not cut it.

X Q. 123. Why do you think it is better to compress the fibre than to cut it, under the conditions of your last answer?

A. In the first place, because my own judgment and experience teaches me that any piece of wood is less in danger of decay if its fibre is not cut, but is simply compressed slightly, in case it is necessary that some metallic part should sink into it. A cut means an open wound through which moisture can much more readily enter, than through the surface fibre, even though the latter be compressed and consequently depressed.

In the second place I understand the testimony of Defendants' practical railway experts and engineers in this case to be to the effect that the great objection to flanged tie plates, as they are called, is that the depth of the flanges causes them to cut the fibre and bring about a speedy rotting of the wood which is very objectionable, this testimony being based on their actual experience and observation of tie plates in service.

It is further my understanding that the object of making Defendants' tie plate a substantially flat-bottomed plate, is to avoid the deterioration of the wood by deeply penetrating flanges. The slight ribs which are provided on the under side of Defendants' plate are designed to increase the grip of the plate on the tie without substantially interfering with this essentially flat-bottomed construction, and without bringing about any substantial cutting of the wood fibre by the plate.

617 X Q. 124. What purpose or bearing has the Defendants' Exhibit Goldie patent 457,584 upon either of the Wolhaupter patents in suit, by way of anticipation or otherwise?

A. I know nothing about the purpose which actuated counsel for Defendant in introducing this patent. I should say, however, that the patent showed a closer approximation to Defendants' tie plate than either of the Wolhaupter patents in suit.

X Q. 125. Do you think a plate which has a flat under surface and three depending claws at each of its two ends or margins, bears any resemblance to the plate that has two sharpened ribs extending transversely across the plate, as in Complainant's Exhibit No. 15?

A. Not very much, no, but full as much or more than Defendants' substantially flat-bottomed plate bears to the essentially and peculiarly flanged structures shown in the Wolhaupter patents.

X Q. 126. Look at the Goldie patent offered by Defendants No. 457,585, for a rail brace and state what bearing, if any, this patent has upon either of the Wolhaupter patents in suit, by way of anticipation or otherwise?

A. The rail brace of this patent includes a tie plate, possessing every function of an ordinary tie plate and capable of being used as such, even though the brace member of the construction was dis-

carded. As to the tie plate member, I would simply repeat what I have already said with regard to the tie plate of the companion Goldie patent No. 457,584.

X Q. 127. By the "brace member" you mean the part lettered *u* in the drawing, with its strengthening rib *t*, and base *p*?

A. Yes.

X Q. 128. And if this brace portion be removed and the remaining part of the device be continued in use under the rail, how would the rail be held in position?

A. It would be held in position on the one side, just as it now is, by the shoulder *f* on the tie plate. It would be held in the other direction by spikes applied directly against the rail flange on either side of the tie plate, after the manner shown for example in the Servis patent No. 294,816. As I have already pointed out in this connection, tie plates are capable of being used without having the spikes penetrate the plate, and have frequently been made without any spike holes. The point of your question is, of course,
618 simply as to the position of the spike holes on the right hand side of the plate, as shown in Fig. 1, which spike holes, because of the intended use of the brace, are placed back some distance from the edge of the rail flange. Spikes inserted in these holes would not, of course, engage the rail, but as I have said before, spikes could be placed against the rail just at the sides of the plate, or at one side of it, or new spike holes might be formed in the tie plate close to the rail flange.

X Q. 128*a*. Now look at the Goldie patent offered by Defendants No. 485,030; this patent I understand you to have testified to be the best reference that you find in the Defendants' patents as an anticipation to the first and second Wolhaupter patents in suit; that is correct, is it not?

A. No, it is not. My testimony is to the effect that this Goldie patent shows substantially the same construction of tie plate as that embodied in Defendants' tie plate, and that consequently it is a complete response to the claims of the Wolhaupter patents in suit, to any extent that Defendants' tie plate is, and that in this sense it is perhaps the nearest reference in the prior art referred to by Defendants—nearest because of its identity with Defendants' tie plate rather than because of its resemblance to the Wolhaupter structure.

There are several other patents of the prior art which more nearly anticipate the precise tie plate construction shown in the Wolhaupter patents, but they are less pertinent in the essential comparisons of this case because not nearly as close to Defendants' tie plate construction as this Goldie tie plate is.

X Q. 128*b*. Will you please state what you understand to be the new thing disclosed to the world by this Goldie patent No. 485,030.

A. I don't know as to that. I assume that it was the particular form of tie plate here shown which was assumed by Goldie to be new. Whether it was or not is a question outside of any comparison which I have been called upon to make in this case.

X Q. 128*c*. What does the patent state to be the object of the invention?

A. The patent states as follows:

"The object of my invention is to provide a tie plate for resting between the rail and tie, in which the middle portion, which carries the rail, will be supported in such a way, as to avoid the common difficulty of depressing the middle portion and elevating the
619 lateral portions by the action of the passing trains.

Another object is to so construct a thin tie plate as to force its lateral end portions to rest upon the tie and to retain the plate against a tendency to slide or move laterally upon the tie.

Another object is to arrange a tie plate that can be made of a rolled-metal bar having the proper transverse contour by cutting transversely to the desired width and then punching the required spike openings."

X Q. 128*d*. What is the purpose disclosed in the Goldie patent of the slightly depressed central portion lettered 5, in the drawing?

A. It is to insure the firm seating of the rail upon the tie plate. The patent points out this as follows:

"It is understood that when a rail of the ordinary T form is formed by rolling the form of the under surface of the base flange of the rail, and which rests upon the tie, is slightly raised in the middle of its width, owing to the clearance required to release the rail from the rolls, and with tie plates of the ordinary form, having a straight or plane surface for receiving the rail, the central portion of the thin plate is depressed slightly into the tie to bring its supporting surface to conform to the fullness of the under surface of the rail, and this depression or bending of the plates causes the lateral end portions thereof to rise from the tie, so that the plate really presents but little more surface for resting upon the tie than is covered by the bottom of the rail, whereas by forming the depression 5 and the convex surface 6, as shown, beneath the rail the rail is caused to rest firmly upon the plate by the lateral portions of its under surface, and the convexity of the under side of the tie plate causes the timber beneath the center of the rail to be firmly compressed to a solid bearing, so that the action of the weight of the rail tends to straighten out the curve of the depressed central portion, and thereby transfers a portion of the strain or weight carried by the plate to the lateral end portions, so that they are thereby held to snug contact with the tie-surface and form a firm and solid bearing for the rail, and prevent any canting or severing action of the rail."

The substance of this is, as I understand it, that in order to prevent the plate from being bent down in its middle by the slight ridge said to be left in the middle of the base of the rail in rolling it, the center of the plate is depressed so as to clear the rail, thus placing the weight of the rail on the bearing surfaces 7, at each side
620 of the middle of the plate, where it is solidly sustained without any tendency to bend the plate.

X Q. 129. Is it not a fact that any heavy strain or load coming upon the two surfaces to which the numeral 7 is applied, in the Goldie patent drawing, namely, the surfaces on either side of the slightly depressed central surface 5, will have a tendency to straighten

out the curve of this depression until the plate is substantially flat and the under surface of the rail flange comes to a full bearing upon the top surfaces of the plate?

A. There will probably be a tendency in that direction, but obviously, if the plate were properly proportioned to its work, that tendency would be successfully resisted.

X Q. 130. This tendency to straighten out under load is one of the features expressed by Goldie in his patent, is it not? And is so expressed in lines 50 to 58, inclusive, of page 2 of the specification as the expected operation of the device, is it not?

A. Yes, it is referred to in the lines mentioned, which I have already quoted.

X Q. 131. Have you any reason to doubt the accuracy of the statement of the patentee as expressed in his specification, with respect to the operation of his tie plate in use?

A. No, I think the tendency will exist, just as I have said, and would be resisted, just as I have said, with the result of transferring "a portion of the strain or weight carried by the plate to the lateral end portions," just as Goldie sets forth. It must be distinctly understood that Goldie does not describe this tendency as bringing about a straightening of the plate, but as simply resulting in transferring the load to the end of the plate, which occurs by reason of the fact that the plate does not straighten out.

X Q. 132. Yes, the Goldie patent does mention, in lines 41 to 49, inclusive, that the tendency to straighten out the curve of the depressed central portion "thereby transfers a portion of the strain or weight carried by the plate to the lateral end portions," but is that sentence and statement corroborative of your last answer to the effect that it is only the tendency and not the straightening in fact, which occurs?

A. It is. A moment's thought will show that it is only because the plate is of a stiff material, capable of strongly resisting a tendency to bend it, that any transfer of weight to the ends of the plate can result. If we assume, for example, that the plate is made of
621 lead, or some other soft metal, capable of readily yielding to pressure, it is apparent that the weight on the rails would simply flatten the center of the plate without acting at all to transfer the weight to the ends of the plate, which in fact, would be practically useless.

X Q. 133. Is it not a fact that "any strain placed upon the lateral surfaces 7 will have a tendency to straighten out the curve of the depression until the under surface of the rail flange comes to a full bearing on the plate" as stated by the patentee in lines 55 to 58, inclusive, and that when the rail flange comes to a full bearing on the plate there is no longer the curved plate, but a practically flat plate, so far as the concave and convex portions originally formed, are concerned?

A. It is undoubtedly a fact, as I have stated before, that any strain coming on the plate through the rail would have a tendency to straighten the plate out. And it is conceivable that "after a long time," as the patent expresses it, if the traffic was sufficiently heavy,

the straightening might take place to an extent sufficient to allow the ridged center of the rail base, as well as its edges, to have a bearing on the plate.

X Q. 134. The Goldie plate of this patent No. 485,030 so far as its top and bottom surfaces are concerned, has the same thickness throughout, has it not?

A. The specification of the patent has nothing to say on this point, and the drawing would indicate that the thickness of the plate did not vary greatly. Apparently it is slightly thicker at its ends and particularly its outer end, at the outside of the rail, and where the rail-abutting shoulder 8, is provided, than at its middle. So far as I can see it would make no particular difference whether the plate was rolled of even thickness or not.

X Q. 135. The depression 5, in this plate, forming a concavity in its upper surface, has a corresponding convexity on the under surface of the plate, has it not?

A. As shown in this patent, yes.

X Q. 136. And the space indicated in the cross section of Fig. 2 of the patent, between the upper surface of the plate and the bottom of the rails, is not a groove or space formed by cutting away any metal from the top surface of the Goldie plate, is it?

A. No, I do not understand that any of these tie plates are ever made by cutting away any metal from their surfaces to form grooves or channels, if the latter are provided. It is all done in the rolling or forging of the plate.

X Q. 137. And in the rolling or forging of the Goldie
622 plate of this patent, there is no channel or depression or groove or corrugation formed in the upper surface of the plate by rolling or forging this plate so that it shall be any thinner at the place where such groove or depression or channel appears; is that correct?

A. Yes, that is correct, the construction being like the first Wolhaupter patent in this respect.

X Q. 138. Do you find in this Goldie patent any groove or depression or channel or corrugation placed in the top surface thereof for the purpose of lightening the plate?

A. No.

X Q. 139. When the weight of the passing load on the rail placed upon this Goldie plate, has performed its expected tendency of straightening out the plate so that the under surface of the rail flange "comes to a full bearing on the plate," is it not a fact that there is complete union or intimacy between the top surface of the plate and the under surface of the rail base?

A. If this ever occurred, by the very terms of the assumption, it would mean that the rail came in contact with the plate throughout the width of its base.

X Q. 140. In Defendants' Exhibit Goldie patent 540356, in Figs. 2 and 3, the same kind of central depression in the upper surface, with a corresponding convexity of the lower surface of the plate immediately beneath the upper concavity, is there shown, is it not, as is shown in the patent you have been referring to, No. 485,030?

A. Yes.

X Q. 141. The aluminum model exhibit O^{10}, I understand you to say, is a correct representation of the construction of the Goldie patent No. 485,030?

A. It is.

X Q. 142. And in this aluminum model O^{10}, the plate is or is intended to be the same thickness throughout its length, is it not?

A. Substantially so, yes.

X Q. 143. Please look at the tie plate marked Exhibit C; is this tie plate a Goldie tie plate, conforming to the patent No. 485,030?

A. I should doubt if this tie plate, Exhibit C, was ever rolled with any intentional depression of the plate on its under side. Otherwise it appears to be precisely the tie plate illustrated in this Goldie patent. And for all practical purposes, I believe it may be
623 regarded as the same tie plate, since it is a self-evident proposition to any one who has ever attempted to straighten out a kinked plate of metal by pressure alone, especially upon a yielding or wooden support, that it would be impossible in this manner to ever eliminate the bend in the Goldie plate so that it would not still offer or afford a visible depression in its upper surface, just as this "Defendants' Exhibit C" does. In other words, the Goldie plate, of patent No. 485,030, for all practical purposes, may be regarded as a flat plate, having a permanent shallow depression or groove in its upper surface, extending longitudinally of the rail between the lateral bearing surfaces for the rail, just as this "Defendants' Exhibit C" shows.

X Q. 144. That is to say, if I understand you correctly, that a Goldie plate made like the Goldie patent No. 485,030 after being subjected to pressure in track, might become straightened out so as to have a substantially flat bottomed surface, but would still retain the depression in its upper surface; do I understand you correctly?

A. No, that is not my idea. It is my opinion, rather, that no amount of use or weight of traffic would ever straighten out a plate made as shown in this Goldie patent No. 485,030, so that it would not still retain a visible depression in its upper surface, corresponding to and probably more evident than that shown in "Defendants' Exhibit C." In a plate originally made like the Goldie plate of patent No. 485,030, the failure of the plate to straighten out so as to obliterate the depression in its upper surface would equally fail to obliterate the slight convexity in its lower surface, but would, nevertheless, leave the plate, what it is in the Goldie patent a substantially flat-bottomed plate.

X Q. 145. Why do you say that the plate of the Goldie patent is a substantially flat bottomed plate and not a substantially flat topped plate as well?

A. Because the bottom of the plate rests upon a compressible and yielding support, into which the convexity of its middle lower surface would be compressed with difficulty to a full bearing, or would speedily wear to that bearing. These plates, it will be remembered, wear their way into the ties so that after extended use they are frequently sunk into the ties to a depth greater than the thickness of

the plate. The top of the plate, on the other hand, presents a hard and unyielding supporting bearing to a hard and unyielding overlying structure. No compression of either the surface of the rail or the surface of the plate can occur, capable of being measured, and the result is that the concavity of the upper surface of the plate, however slight, still remains a concavity and still involves a separation of the plate from the rail along this concavity. This is shown, for example, by "Defendants' Exhibit C," which is a plate that has evidently seen years of service. The concavity along the center of this plate is very shallow, indeed, and evidently was so originally, but it is a distinct depression in the bearing surface of the plate, nevertheless, even after such years of wear, and it needs but a glance at the Exhibit to show that the rail never had any bearing on the plate along this concavity.

624

X Q. 146. Does not this plate, Exhibit C, show that the rail had a bearing at the margin of the plate at least at one end extending entirely across the slight depression or concavity in the upper surface?

A. Yes, it is apparent that either the concavity was not carried clear through at this end of the plate, or that it was left sufficiently more shallow than the rest of the concavity so that under years of wear the rail along this edge, for an eighth of an inch, or thereabouts, had a bearing across the concavity.

X Q. 147. And does not this same plate show that the rail had a bearing to some extent, at least across the other end of the concavity in the upper surface?

A. No, I think not.

X Q. 148. Disregarding the short depending ribs on the lower surface of this Exhibit C, and disregarding also the rail-sustaining shoulder on the upper face of the plate, state whether or not the plate has the same thickness of metal throughout?

A. No, it has not.

X Q. 149. If the plate is any thinner at one point than another, please point out where?

A. It is thinner at its ends, remote from the rail-supporting portion of the plate, which is made somewhat thicker, apparently, than these ends.

X Q. 150. Is this plate Exhibit C, any thinner throughout the portion indicated by the top cavity or depression than it is throughout the rail bearing surfaces that extend along each side of this depression?

A. I think it is, but the plate is so uneven that in the absence of a pair of callipers, I am unable to be certain about it.

X Q. 151. Would you say, from looking at this plate, that it had been made originally thinner along the length of this central depression of the top surface and throughout the two side rail-bearing surfaces?

625

A. Yes.

X Q. 151. Please look at the plate "Exhibit B" and state whether or not in your opinion this plate was originally constructed in accordance with the Goldie patent, 485,030?

A. No, I should not think that this plate was originally rolled

with a convex under surface along its middle, as the Goldie patent 485,030, provides. The whole plate has been bent somewhat from long service, so that taken in its entirety, it presents a slightly convex under surface, but not one which is especially convex along the middle of the plate, or which, apparently, ever has been. The upper surface of this plate was evidently rolled with a distinct depression or concavity like Exhibit C, although this is less apparent for the reason that the plate has been exposed to the weather since being taken from beneath the rail, or has otherwise become corroded on its rail bearing portion, so that these do not show the contrast between the places where the rail had its bearing and the concavity between them as Defendants' Exhibit C does. I note, moreover, that in the case of Exhibit B, the wear of the rail on the plate has been considerable, as indicated by the ridge left at the edge of the rail-supporting bearing opposite the shoulder of the plate. And of course before this wear occurred, the depression or concavity in the center of the plate on its upper side, must have been much more marked.

X Q. 152. And does it not appear from this plate Exhibit B, also as in Exhibit C, that in the use of this plate in track the rail has had a bearing at the margins of the plate extending across the ends of this depression in the upper surface?

A. Possibly so. I am unable to definitely ascertain, owing to the corroded condition of the plate.

X Q. 153. Will you say that the two plates, Exhibits B and C, has been turned out by the same set of rolls?

A. I should say that it was quite likely that they had.

Adjourned to Friday, January 7, 1910, at 10 o'clock A. M.

January 7, 1910—10 o'clock a. m.

By agreement of parties examination continued to January 12, 1910, at 10:30 o'clock A. M.

626 January 12, 1910—10:30 o'clock a. m.

Met pursuant to adjournment.
Present: Mr. Brown and Mr. Reed.

HENRY W. CARTER resumed the stand for further cross-examination by Mr. Brown.

X Q. 154. Did I understand you to say that you regarded, as one of the essentials of a practical tie plate, a rib or projection depending from the bottom of the plate directly below the vertical axis of the rail when the latter is in position upon the plate?

A. I do not regard this as an essential.

X Q. 155. Neither the Goldie patent No. 485,030, nor the Defendants' Exhibits plates B and C, have such a projection have they?

A. No.

X Q. 156. Referring again to the Reece patent No. 488,662, is it

not true that the top surface lettered *a*, on which the flange of the rail rests, is a perfectly flat surface?

A. Probably so. There is no indication in the drawing that it is otherwise, the specification says nothing about it. Of course the surface could, consistently with the showing of the drawing, be otherwise than flat. The drawing simply indicates the edge of the plate, and that this edge is straight. Back of the edge it might be variously grooved or corrugated without showing in the views of the drawing, but, of course, this is simply a possibility. There is no affirmative indication that the surface is any other than flat.

X Q. 157. Does not the Reece patent No. 494,692, show a flat top surface for the flange of the rail to rest upon?

A. It shows a flat surface cut away in two places, so that the bearing surface is interrupted and divided into three supporting surfaces.

X Q. 158. The Holmes patent No. 495,807, likewise shows a plain flat top surface for the rail to rest upon, does it not?

A. The Holmes patent referred to shows a plain, flat surface for the rail to rest upon.

X Q. 159. And this is equally true of the Worthington patent No. 506,963, and the Churchward patent No. 508,086, is it not?

A. Yes.

627 X Q. 160. And there are no top flanges, but a plain flat top surface for the rail to rest upon in the Holmes patents No. 514,466, and 514,567, and the Harris patent, No. 514,828, the Servis patent No. 524,868; the Clark patent No. 529,854; the Gabel patent No. 530,175; Morrell patent No. 531,637; Stewart patent No. 535,693; Wolhaupter patent No. 538,808; Chamberlin patent No. 538,817; Reece patent No. 541,984; Weed patent No. 566,828; Sellers patent No. 573,543; Richards patent No. 584,603; Cloud patent No. 592,865; Harris patent No. 603,563; Morrison patent No. 622,965; is not this true?

A. Yes. By top flanges, you of course mean flanges for the rail to rest upon. Most of these patents show flange-like shoulders for the edge of the rail to abut against, but I understand that your question does not have these in mind.

X Q. 161. Please look at the Defendants' Exhibits B and C tie plates, and state which of these tie plates, in your opinion, if either, was in use in track on Defendants' Exhibit A, which is a section of a tie?

A. Either might have been, or some other similar plate instead of either, but as between the two plates, Defendants' Exhibit C seems to fit the "bed" worn in the tie more perfectly.

X Q. 162. Do you believe that in this Exhibit A the fibres of the wood were cut or merely compressed by the under ribs of the plate?

A. They have evidently been cut, to a considerable extent.

X Q. 163. Referring to the Wolhaupter patent No. 691,332, which is the second Wolhaupter patent in suit, what is the object or function of the two irregularly shaped apertures which are in opposite diagonal corners of the plate?

A. The patent does not explain. They might be used as spike holes for spikes made with heads thin enough vertically to fit between the surface of the plate around these holes and the under surface of the rail flange. In this case the spikes would, of course, be beneath the rail, which would be most unusual, and which would prevent the spikes from acting in the usual manner on the rail flange to hold the rail down. But this would appear to be the only possible function of the apertures mentioned, if they have any function, and in the absence of any explanation of the patent I suggest it.

X Q. 164. Turning now to the Wells patent No. 203,570, is it not true that the device there shown is a combination of rail chair and rail joint?

A. No, I should consider that statement rather misleading, for the reason that the word "combination" generally implies two distinct structures brought together and the structure here is essentially a single structure.

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Of course, as I have pointed out, the terms "rail-chair" and "rail-joint" have been very loosely applied in this art, together with a number of other terms, all of which more or less overlap. And in a general sense, in view of this looseness of the terms, the appellation which you have suggested might not be deemed absolutely inapplicable because so vague.

X Q. 165. The Wells chair is shown and described as being located under and adapted to support the joints or abutting ends of two adjacent rails, is it not?

A. Yes.

X Q. 166. And is there anything in the specification or drawing to indicate that it was intended to be used as a chair beneath the rail at any other point of the rail than underneath the joints?

A. Yes, both in the specification and the drawing. This is indicated in the specification by the fact that the peculiarities of the structure which the specification points out, have no relation whatever to the joining of the rail or to the question of whether it is to be located beneath the joint or elsewhere along the length of the rail. Particular attention is called in this connection to the claim of the patent, and to the statement of the specification as to the characteristic peculiarities of the structure claimed, which immediately precedes the claims, at the bottom of the second column of page one, and the top of the first column of page 2. Neither this portion of the specification nor the claim, it will be noted, refers in any way to the joining of the rails, or mentions the word "joint," or sets forth any structural peculiarity bearing any relation to the locating of the structure beneath the rails at their joints.

So much for the text of the Wells patent, in the drawing the applicability of the device for use anywhere along the length of the rail, whether at the joint or not, is perfectly illustrated at Fig. 2, in particular. The entire structure, in fact, is perfectly illustrated in Fig. 2, and this figure alone, if the others had been omitted, would have answered all requirements as to the illustration of the supposedly improved structure which the patent describes and claims.

If the illustration had been confined to Fig. 2, and if those statements of the specification relating to the supporting of the
629 joints of the rails by the structure of the patent had been omitted, the essential disclosure of the specification would have been as complete as now. The detailed description of the patent would have applied, word for word, as it now applies, and the claim would have been just as perfectly supported by both the specification and the illustration, thus restricted.

Of course I do not mean to be understood as contending that there is any affirmative statement or showing in the Wells patent as to the applicability of the device disclosed for other points along the rail than at its joint. There is no such affirmative statement or showing. What I am pointing out is merely that the structure which is illustrated, described and claimed, has no peculiarities or characteristics which necessarily confine the device to be used at the joints of the rails nor which in fact have anything necessarily to do with the joining of the rails.

X Q. 167. On the other hand is it not true, as the specification of the Wells patent states, in the third paragraph, that Fig. 1 of the drawing shows the chair "supporting ordinary rails *at their joint*"; and in the fourth paragraph that "A represents a wrought metal railway chair, adapted to support railway rails *at their joints,*" and further, in the second paragraph, "*my invention* relates to improvements in railway chairs; and *it consists* in a wrought metal chair *adapted to support the joints* of railroad rails, and bridge or span two or more sleepers *at such points?*

A. Yes, the quotations you have made from the patent are accurate, leaving the italics out of consideration.

X Q. 168. And the chair is shown in Fig. 1 as extending over four sleepers or ties, is it not?

A. Yes.

X Q. 169. Mr. Faulkner, the head of the Tie and Timber Department of the Santa Fe Road, testifying for defendants in this case, has stated that ties were usually six by eight inches in cross section, and laid with twenty inch centers, and that with that as a standard the chair illustrated in Fig. 1 of this Wells patent, if made long enough to extend over four ties, would be about sixty inches in length. You agree with him, do you not?

A. I agree with him that assuming the dimensions and spacing of ties thus specified, the length of the Wells device, made long enough to span four ties, would be about five feet. I have no accurate personal knowledge of the standards of railroads in respect to the sizes and spacing of ties.

630 X Q. 170. Assuming two ties in track, of the size of this Exhibit A, approximately six by eight inches, were laid, as Mr. Faulkner states, adjacent to each other, twenty inches from center to center, then the Wells chair, to span completely two of such ties, which is the minimum length indicated in the Wells patent, would be about twenty-eight inches, would it not?

A. Yes.

X Q. 171. Is there anything shown or disclosed in the drawing or

specification of the Wells patent to indicate that the patentee contemplated making his railway chair as short as seven and a half inches in length, that is, the length indicated by Defendants' aluminum model O^6?

A. Nothing but the facts that the structure specifically described and claimed by the patent is answered to just as completely by a seven and a half inch plate as it is by a twenty-eight inch or sixty inch plate.

X Q. 172. Is there any suggestion or intimation in the Wells patent, or provision made, for cutting spike holes in the Wells chair?

A. There is no suggestion on this point. The depressed grooves in the top of the plate would afford a place for such spike holes, the spikes to be placed beneath the flange of the rail, just as I have pointed out there might be in the second Wolhaupter patent in suit, assuming that the rectangular openings in the plate of this Wolhaupter patent, to which you called my attention, were used as spike holes.

X Q. 173. The purpose of the lower central rib *e* of the Wells patent is to prevent lateral displacement of the chair with respect to the tie, and also to give longitudinal rigidity to the chair, is it not?

A. Yes.

X Q. 174. Would you say that this rib would be sufficient to prevent such lateral displacement in the absence of spikes?

A. Probably not, any more than the ribs of any of the other tie plates before the Court, as for example, Defendants' tie plate. Spikes for holding down the rails and also for holding down the tie plates, either directly or through the holding down of the rails, are, I take it, necessary incidents of railroad construction, and it is for this reason, I take it, that the Wells patent indicates the use of spikes as it does.

X Q. 175. I do not understand from your previous testimony that a device made of the same material as the Defendants' tie plate Complainant's Exhibit No. 15, but of the exact shape, style and configuration of the cut-off section of the Wells chair which
631 has been offered in evidence as aluminum model Defendants' Exhibit O^6, would be a practical or commercial tie plate; is this a correct understanding of your evidence herein?

A. I do not now remember what, if anything, I have said in this relation, but I have no hesitation in stating that I do not think that a tie plate, of the exact shape, style and configuration of this Exhibit O^6, any more than the tie plates of the exact shape, style and configuration of those disclosed in the Wolhaupter patents in suit, and exemplified by Defendants' Exhibits O, O^1, O^2, O^3 and O^4, would be likely to prove practical, commercial tie plates. It is too obvious that all of these constructions may be advantageously modified in shape, style and configuration.

X Q. 176. If the section of rail chair represented by the aluminum model Defendants' Exhibit O^6, were made of the same material as the Defendants' tie plate Complainant's Exhibit No. 15, and were

placed in track on adjacent ties under the rail as tie plates are placed, but without being secured to the ties by spikes, is it your opinion that this under depending rib would serve to hold these chairs in place and prevent lateral displacement of the chairs?

A. No, I think spikes would necessarily have to be employed in connection with this, as with any other tie plate, in order to hold the rail down on the plate, and both down on the tie.

X Q. 177. And where would you place such spikes, assuming the conditions in my last question?

A. They might be placed, as the Wells patent indicates, or they might be placed as the Servis patent indicates,—patent No. 249,407—or spike holes might be appropriately provided in the plate in accordance with the dictates of the mechanic's judgment, just as would be necessary in the case of the Wolhaupter tie plate of patent No. 579,509, for example. Moreover, as I have suggested, spike holes might be provided in the channels of this Wells plate, after the manner which appears to be indicated in the device of the second Wolhaupter patent in suit. Of course the placing of spikes beneath the rail would seem to be objectionable for obvious reasons, but it would be no more objectionable in the case of the Wells device than in the case of this second Wolhaupter device, which equally omits any other provision for spikes.

Adjourned to 2 o'clock p. m. of the same day.

632 January 12, 1910—2 o'clock p. m.

Cross-examination of HENRY W. CARTER resumed by Mr. Brown as follows:

X Q. 178. If the shortened Wells chair, like this aluminum model O^6, was to be provided with spike holes adapted to not only hold the chair to the tie, but also to engage the flange of the rail base and hold the latter to the chair, how would you alter this device to accommodate such spike holes?

A. Simply by making it wider.

X Q. 179. How much wider would it have to be for that purpose?

A. An inch on each side, perhaps, if it is to be assumed that the holes are complete apertures. If notches, instead of complete holes, were considered sufficient, as they sometimes are in this sort of devices, it would not necessarily have to be any wider.

X Q. 180. That would add considerable to the weight of this chair, would it not, namely, to widen it for the purpose of providing spike holes or spike notches?

A. It would add something to the weight, but of course the widened portions, or portions constituting the additional width of the plate could be made quite thin, and so would not add as much to the weight as might at first be thought.

X Q. 181. But a chair made of steel like the Defendants' tie plate, Complainant's Exhibit 15, but in other respects precisely like this aluminum model Exhibit O^6, even without such additional width that might be necessary to accommodate spike holes would be excessive weight for use as a practical tie plate, would it not?

A. I doubt if it would weigh much more than the Defendants' tie plate, Complainant's Exhibit 15.

X Q. 182. Do you happen to know how much the Defendants' tie plate, Complainant's Exhibit 15, weighs?

A. No.

X Q. 183. Assume that Complainant's Exhibit No. 15, Defendants' tie plate, weighs seven and a half pounds. How much more or less would a rail chair like this aluminum model of the Wells device, Exhibit O^6, weigh, if made of the same steel as Defendants' tie plate?

A. Roughly speaking, I figure that an iron or steel plate
633 in duplicate of Defendants' Exhibit O^6, would weigh between nine and ten pounds.

X Q. 184. Well inasmuch as it is in evidence in this case that tie plates are sold by the ton, a difference of two or more pounds in weight in a single tie plate or device, would make a material and almost prohibitive difference in the practical value of the heavier plate, would it not? It being remembered that when such devices are used at all they are used in very large quantities, orders being frequently given for several thousand tons of tie plates at one time?

A. Other things being equal, I should say that there is no doubt but what a plate weighing two pounds more—say 20 per cent. more—would not be in the running with the lighter plate. This whole computation, however, is absurd, for two reasons, first, because it attempts to base a conclusion on the exact proportions of a device as it happens to be represented in a picture of a patent drawing, and second, because it assumes that no modifications whatever in the device pictured in the drawings of the patent, can be considered possible in the device as it is reduced to practice. And this absurdity is rendered doubly apparent by the extraordinary divergence of Complainant's actual devices from those illustrated and described in the patents under which complainant is claiming, and especially in view of the extraordinary divergence of Defendants' device, which Complainant is urging as an embodiment of Complainant's patents, from the actual devices shown and described in these patents. This divergence in these latter cases not only goes to the matter of form and proportions, but to style and essential design.

If any such rule of determining what a patented device must be, as is here assumed, is given credence—that is to say, if it is to be assumed that a patented device can be nothing different than what the picture of the patent happens to represent, even to its exact dimensions, then obviously this whole controversy is useless and absurd, since it needs but a glance at the drawings of the patents in suit in comparison with Defendant's construction, to show that under any such rule it is impossible to figure out the faintest shadow of resemblance between the patented devices and the alleged infringement:

Mr. Brown: So much of the answer which follows the first three lines thereof, is objected to as not responsive to the question and as volunteered and a motion is made to strike the same from the

record. The witness is requested to answer questions as to
634 facts and not to discuss propositions and theories of law respecting the construction of the patents.

X Q. 185. I understand you have testified that this aluminum model, Exhibit O^6, which has been cut off from one end of the long aluminum model chair representing the Wells device, is an accurate representation of the structure of the Wells patent; and, secondly, that if it had been made in steel as is Defendants' tie plate it would be practical to use the same as a tie plate in track; is this understanding correct?

A. It would be practical in the sense of being possible practice. In the sense of being commercially practicable, it undoubtedly would not be, since the art furnishes so many devices which are obviously more satisfactory. Commercial practicability is, of course, largely a matter of comparison—of whether one device is worth while to use, in view of other devices which are available, and in any such comparison it must obviously appear that any one of perhaps fifty other devices which the art shows would be superior to this device of the Wells patent, from the point of view of commercial practice.

X Q. 186. The width of the space between the two outside top ribs or flanges of the Wells device, as shown in the aluminum model O^6, provides for a rail base 3¾ inches or thereabouts indicating approximately a fifty pound standard rail, which, as testified to by Mr. Faulkner for the Defendants in this case would be a heavy rail in 1878, the date of this Wells patent. If this Wells device were, therefore, widened to accommodate the standard eighty pound rail of the present day, made substantially the area of the Defendants' plate, say 7½ inches by 9 inches, approximately how much heavier would such a chair be, other than the change of dimensions which I have indicated it conformed to the aluminum model O^6 in its configuration and proportions?

A. I don't know.

X Q. 187. Would you say that such a Wells chair as I have indicated in the last preceding question would weigh five or six pounds more than the weight that you have calculated as the weight of the device O^6 if made of steel?

A. Easy enough, I should say, if the same proportions as this Exhibit O^6 shows were followed. I see no reason for this assumption, or for assuming that, in making any such plate as an actual tie plate, the proportions, width and depth of channels, thickness of
base, width and depth of ribs, etc., etc., should not be varied
635 as desired and according to the skill and judgment of the mechanic. This I understand to be the ordinary rule observed with regard to the reducing of any patented device to practice, and I see no reason why it should not apply to the Wells patent and device, as to all others—as to the devices of the Wolhaupter patents in suit, for example. Inasmuch, however, as I understand your question to be based on this assumption, however absurd it may be, I have answered as I have in view of this assumption.

X Q. 188. Is it your opinion that a chair or tie plate device flat on its under surface excepting that it is provided with one depend-

ing projection or rib, and shaped like this depending projection of the Wells patent, as shown in the aluminum model O^6, which is an inch and more in width and almost three-quarters of an inch in depth, could be forced into a railroad tie, either hard or soft wood, by the weight of the passing load, that is, the train load, over the track, and without the tie being cut or shaped to receive this depending rib?

A. No, not if the rib were made of these dimensions, I doubt if it could be.

X Q. 189. Would it be practical for a section man, for example, who, out in track, would have some of these Wells chairs in use under the ends of the rails, the chairs being anywhere from two to five feet in length, and who wanted to make use of a tie plate intermediate of the ends of the rail, to saw off a section of the Wells chair as you have done or had done, and take a section like this aluminum model O^6, and use it in track as a tie plate? And if not, why not, and if yes, how would he use it and install such a cut off section as a tie plate?

A. No, it would not be a practical proposition for him to do so, for the reason that the bare labor of sawing off such a device would make it not worth while. It would be possible and if the device was thus sawed off, it could be placed under the rail on any tie prying up or removing the rail, cutting away the wood, and then inserting the plate beneath the rail, just as the patent shows it.

Again, however, I would call attention to the absurdity of the whole inquiry.

In the first place, there is no suggestion so far as I know, made in behalf of Defendants, that such a device as Defendants' O^6 would ever be produced in practice, if wanted, by sending out long lengths of the plate and leaving it to the section hands to saw off short
636 lengths from them in order to make tie plates such as are exemplified by Defendants Exhibit O^6. Counsel might just as well assume that it would be practicable to furnish Defendants' tie plate, Complainant's Exhibit 15, in long lengths, rolled to the shape indicated and leave it to the section hands to cut these off into short pieces, the length of Complainant's Exhibit.

The obvious fact is that if any person, following the Wells patent, wished to use the structure described and claimed by Wells for tie plate purposes alone, he would make it no longer than such purposes demanded, or in other words, would make it the length of an ordinary tie plate, as Defendants' Exhibit O^6 shows, and when the section hand came to place it in the track, he would simply have this short length of channel iron to handle, exactly as in the case of any other tie plate—of Complainant's Exhibit 15, for example.

In the second place, as I have already pointed out, there is not the slightest basis for assuming that such a device, so made in accordance with the Wells patent, but with purposes of an ordinary tie plate alone in mind, would have any depending rib of the exact dimensions shown in this Exhibit. Under such circumstances, and with tie plate service alone in view, the rib would naturally be reduced to dimensions which would enable the plate to be readily put in

place without cutting the tie, just as in practice the exaggerated and absurd depending flanges of the various Wolhaupter structures and particularly of the third Wolhaupter patent in suit, must in practice be reduced, and are reduced, in so far as any such devices are employed at all, to a very marked extent. Complainant, through its expert Mr. McElroy, for example, identified the very shallow and small ribs of Defendants' tie plate, Complainant's Exhibit 15, with the very marked and deep ribs or flanges shown in the Wolhaupter patent, not because they follow the exact proportions of the patents, for they do not any where nearly approach these proportions, not because of the same shape, for they are noticeably different in shape, but simply because it is contended that notwithstanding the difference in shape and proportions, they form in effect similar structural elements, similarly located and designed and intended to produce similar results.

And while, for the reasons pointed out at length in my direct examination, I do not agree with Complainant's expert, Mr. McElroy, in the ultimate conclusion which he came to as to the substantial identity of Defendants' tie plate in this and other re-
637 spects, with the tie plate constructions described and claimed in the Wolhaupter patents in suit, I do not for a moment, it will be noted, base my different conclusions upon any mere difference of proportions or upon the failure of Defendants to follow the exact dimensions which the application of a scale to the drawings of the patent in suit might indicate. Such a basis of comparison I would deem utterly devoid of reason, leaving out occasional situations where a difference in function or result can be predicated upon a difference in dimensions, and I deem it equally absurd and unreasonable to apply a scale to the drawings of the prior art patents and attempt to form any conclusion upon the assumption that the exact dimensions which the scale may indicate would necessarily be followed out in practice, regardless of the skill or judgment of the mechanic, or any rule of common sense which would naturally be applied in the situation, in view of all the conditions of that situation under the particular circumstances in hand.

Mr. Brown: All that portion of the answer following the first two sentences thereof, is objected to as not responsive to the question, as volunteered, and as incompetent, and a motion is made to strike the same from the record.

Cross-examination closed.

Redirect examination by Mr. Reed:

Mr. Reed: By inadvertence, a model illustrative of one of the prior art patents has been omitted.

R. D. Q. 190. I call your attention to Letters Patent to H. W. Avery, dated January 5, 1897; No. 574,773, railway tie plate, and to an aluminum model marked Defendants' Exhibit O^{20}, and further tagged "Device of Avery patent Prior Art No. 574,773, January 5, 1897, signed and initialed by you, and ask you to state, after such

comparison and examination as you may make, your judgment as to whether this model correctly embodies and represents the device shown in the Letters Patent referred to?

A. I find, on examination, that this is a correct model, on a small scale, of the tie plate shown and described in this Avery patent.

Mr. Reed: Model offered in evidence as Defendants' Exhibit O^{20}.

Mr. Brown: Complainant's counsel objects to the aluminum
638 model Exhibit O^{20}, of the Avery patent, as incompetent, irrelevant and immaterial.

HENRY W. CARTER.

Whereupon an adjournment was taken.

February 21, 1910—2 o'clock p. m.

Met pursuant to agreement.

Present: Mr. Brown, Mr. Reed and Mr. Cooke.

CHARLES DYER, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation?

A. Charles Dyer; my home residence, Denver, Colorado; Vice President of the Rogers Ballast Car Company, Railway Exchange, Chicago.

Q. 2. Were you ever in the employ of the Atchison, Topeka & Santa Fe Railroad Company or any company which is a part of that system, if so, when, and briefly give us your positions and if possible the dates.

A. I was in the employ of the Atchison, Topeka & Santa Fe Railway from September first, 1870, to February first, 1900. At different times during that period I was station agent, train master, material agent in charge of construction, division superintendent and general superintendent.

Q. 3. During what period were you division superintendent, and where was your division located?

A. I was made division superintendent in 1884; my division extended from Raton, New Mexico, to Albuquerque, New Mexico; afterwards the division was extended to El Paso and Deming, New Mexico, later it was extended eastward to La Junta. June 1st, 1894, I was made general superintendent with headquarters at Colorado Springs, Colorado. In 1895, that office was abolished on account of the Colorado Midland Road being reorganized and I was made division superintendent at Pueblo, Colorado, having jurisdiction from Denver, Colorado, to Dodge City, Kansas. On February 1st, 1900, I resigned and was made general superintendent of the Colorado & Southern Railway, with headquarters at Denver.

639 Q. 4. Please state whether at any time Mr. D. Elliott or Dan Elliott, occupied any position with the Santa Fe road in your division, and if so what?

A. Mr. Daniel Elliott was roadmaster, with jurisdiction between

Las Vegas and Albuquerque, I think, prior to my being appointed Superintendent, when I was trainmaster, and he remained with me after I was made Superintendent I think for seven or eight years.

Q. 5. Were you personally acquainted with him?

A. Yes, we were very intimate.

Q. 6. Are you familiar with his handwriting?

A. Yes, sir, quite sure I could identify it.

Q. 7. Did you as Division Superintendent, at various times while he was roadmaster, receive letters from him in your official capacity?

A. Yes, quite often.

Q. 8. Look at the book which is a letter press impression book, and especially page 416 thereof, which has already been identified and introduced in evidence as "Exhibit E" in connection with the deposition of Daniel Elliott and state if you can in whose handwriting the impression on that page is?

A. Looks quite natural, I should feel certain that it was the handwriting of Mr. Daniel Elliott, my old roadmaster.

Q. 9. And from an examination of the other pages in the book, what would you say as to those? As far as you can determine from a cursory examination?

A. It is all the same handwriting.

Q. 10. Do you know what has become of the original of the impression on page 416, "Exhibit E"?

A. No, sir, I have no means of knowing.

Q. 11. Do you recall the occasion of the installation of a thousand tie plates on Mr. Elliott's division?

A. I am not so positive of the exact number. I remember of quite a number being installed at a certain point.

Q. 12. Please describe the tie plates which you have in mind as being installed upon the Santa Fe road, if you can. I mean the tie plates, if any, which are mentioned in this letter in saying "I received 1000 plates a short time ago, I think they are called the Potter plates; I consider them far superior to the Servis plate for curves?"

A. I remember the installation of certain tie plates at a point I should say eight or ten miles west of Las Vegas, New Mexico, where we had trouble in holding our track to gauge on curves. These plates were sent to me from haedquarters at Topeka; my
640 recollection is that I simply asked for tie plates, did not specify any particular make as at that time I had had very little experience with plates. The plates were a rolled steel plate, rather thin, that is, not very heavy, with a shoulder crosswise of the plate, or parallel with the rail, with four spike holes, two on the outside and two on the inside with shallow ribs across the bottom of the plate which would be crosswise of the tie.

Q. 13. What about the top surface, outside of the shoulder?

A. It was flat or nearly so, a slight depression, a concave space through the center.

Q. 14. Look at the two tie plates, one of which is marked "Defendants' Exhibit D" and the other "Defendants' Exhibit C" in this suit, and state whether or not the tie plates referred to in your testimony were like or similar or identical with these?

A. To the best of my recollection the tie plates that I installed were like these, the same shoulder and the same channels on the bottom running crosswise.

Q. 15. And what as to the top?

A. It had this same space here, what we call a space for sand and dirt to roll out from under the rail.

Q. 16. What would you say as to these two tie plates Exhibits B and C being identical with the plates that were installed as you say? Would you say they are the same?

A. To the best of my recollection they are identical with those.

Q. 17. Do you recall having seen the plates that you spoke of before they were installed?

A. No, sir.

Q. 18. Did you see them after they were installed and while they were in the track?

A. Yes, sir, saw them several times.

Q. 19. Do you recall the place or places in the track where they were installed, or the name of the curve or curves, if so, please state?

A. The curves were all numbered, but I can't remember the exact number of the curves, but I can give you the location. They were put on two curves, the first and second curve west of Sulzbacher station.

Q. 20. Have you any recollection as to the number of plates of this description that were so installed?

A. Several hundred; I can't say just how many.

641 Q. 21. Can you tell us the date or year in which the plates were installed?

A. I couldn't state the exact year. I could be governed by the date of my transfer from that point to Colorado.

Q. 22. When were you so transferred?

A. June 1st, 1894.

Q. 23. And was it before this transfer that these plates were installed?

A. Yes, sir.

Q. 24. As nearly as you can recollect, about how long prior to the transfer were these plates installed in the track?

A. I should think it was at least a year, and not more than two years. A year or two before.

Q. 25. What observation or inspection, if any, did you make of these plates after they were installed?

A. I recollect of going and examining them, I should say at least three or four times, with Roadmaster Elliott.

Q. 26. What was the purpose for which these plates were installed on these curves, if you know?

A. To prevent the track from spreading and widening the gauge.

Q. 27. From your inspection and observation could you tell whether or not they accomplished the purpose, and did prevent the track from spreading where they were installed?

A. They were considered very satisfactory and I didn't perceive any evidence of spreading.

Q. 28. I wish you would state so far as your observation and in-

spection went, the character of the service performed by these plates, whether it was satisfactory or not?

A. It was so considered by myself and the roadmaster.

Q. 29. When you were transferred, in June, 1894, to Colorado Springs, were these plates still in the track?

A. Yes.

Q. 30. What reason was there, if any, for your repeated inspection and examination of the functions of these plates?

A. We had had so much trouble with the track spreading in that locality, that it became quite a serious matter to keep trains on the track, and we were making every effort to overcome the difficulty. These plates were such a radical change from anything I had seen before that I was anxious to satisfy myself whether they were accomplishing the object for which we got them, and to enable me to make reports to my superior officer.

642 Q. 31. Did you, while you were still in charge of this division obtain any more tie plates of this description for use on your division?

A. I remember of making requisition for several thousand, probably twelve or fifteen, I don't remember just how many.

Q 32. And were they installed?

A. Yes, some of them. I don't recollect the number; there were some laid farther south on Glorietta Mountain.

Q. 33. Can you recall any other place where they were laid?

A. I don't think there was any more than that during the two years I was there.

Q. 34. Reading the letter, or rather the impression, Exhibit E, what would you say as to the plates which are mentioned therein as "I received 1000 plates short time ago, I think they are called the Potter plate" being the ones which you have testified about as being installed on the first two curves west of Sulzbacher?

A. That was about the number we received, a thousand; might have been a few more or a few less, I can't say.

Q. 35. And would you say that those were the plates mentioned in the letter?

A. Yes, sir. He calls them "Potter," I called them "Porter."

Q. 36. Whose manufacture were these plates, if you know?

A. I do not know.

Q. 37. Well, did you have any information or advice on that subject?

A. No, sir.

Q. 38. Did you have anything to do with the construction of any portion of the Santa Fe system that was included in your division at this time?

A. I was connected with the Construction Department at this time.

Q. 39. As originally laid, were there tie plates used on any portion of your division?

A. No, sir.

Q 40. As nearly as you can recollect, when were tie plates first used on your division?

A. The thousand tie plates spoken of were the first I used.

Q. 41. Had you known of any other plates being used on that division, or on any railroad that you were connected with before this time?

A. Yes, we had used other plates east of there.

643 Q. 42. And about how long before this date, January 25, 1893, were tie plates, to your knowledge, first employed on any part of the system?

A. I am not so clear about that because I was not in charge of that division of the road; I should say four or five years.

Q. 43. And what was the name or style of the plate so used, if you know?

A. It was called the Servis plate.

Q. 44. Did you see any of those plates?

A. Not till afterwards.

Q. 45. And where did you see the Servis plate afterwards?

A. As my division was extended east to La Junta afterwards I found some in the track between Trinidad and La Junta.

Q. 46. When was that, Mr. Dyer, as nearly as you can recall?

A. About 1886 or 1887.

Q. 47. Please explain. When was it that your division was extended so as to include La Junta?

A. I think it was 1887 or 1888.

Q. 48. And when you took charge of your extended division in 1886 or 1887, you found some Servis tie plates, did you?

A. I think there were some picked up and put in the scrap, taken out of track.

Q. 49. This transaction to which the letter refers, of a thousand tie plates, occurred in 1892 or 1893; was this before or after your division was extended to La Junta?

A. After.

Q. 50. Then please give us the date as nearly as you can, when you first saw tie plates of any kind used, or that had been used, in your division?

A. On my division, not until 1892, two years before I went to Colorado.

Q. 51. And when was the first date that you say tie plates used on any other division of the Santa Fe road?

A. I can't remember the exact date, it was after 1887,—1887 or 1888 after my division was extended over.

Q. 52. Then when you say that these plates like Exhibits B and C were the first used on your division, you mean your original division, do you, that you had charge of?

A. Yes, sir, tie plates that I installed myself.

Q. 53. What was the character or style of the Servis tie
644 plate, if you remember; please describe it as nearly as you can.

A. A rolled steel plate, flat top; some of them had two ribs and some of them had four ribs on the under side, running lengthwise of the tie. My recollection is they only had two spike holes, one on either side of the rail.

Q. 54. And what about a shoulder on the top?
A. They had no shoulder.
Q. 55. And do you remember whether they were all flat topped or some of them had corrugations or grooves?
A. I am not exactly clear as to that, my recollection is not distinct. I think they were all flat. I saw some tie plates after I went to Colorado, either the Servis or very much like it, that had a slight corrugation in the top, but I won't be absolutely — it was a Servis plate.
Q. 56. Do you know the way in which the tie plates like Exhibits B and C were put in the track? I mean whether they were seated in the tie, or simply placed on it and the weight of the rail and load did the seating?
A. We simply put them on the tie under the rail and allowed the weight of the locomotive and cars to embed them, seat them.
Q. 57. And what was your observation as to whether they were seated by the weight of the load?
A. With pine ties they soon became seated; with oak ties it took some little time before they were down in place.
Q. 58. And did you observe whether after tie plates of this description had been seated the ribs on the lower side had cut the fibre of the tie or simply indented it?
A. The outer surface of the tie, the fibre was practically broken through by it; farther in they were simply indented, pressed down, not broken in two.
Q. 59. Did you observe tie plates of this description like B and C installed as you described, to ascertain whether these two ribs on the lower side did indent the tie sufficiently to get a grip or catch on it that would prevent lateral movement?

Mr. Brown: Objected to as leading.

A. The different examinations I made I didn't discover any spreading of the track or movement of the plate.
Q. 60. Did you discover in such examinations depressions in the tie surface where these ribs engaged in it?
A. I don't understand your question.
Q. 61. I mean did you see on the tops of the tie surfaces
645 cross indentations made by these ribs on the lower surface of the plate and in which the ribs engaged?
A. Yes, I examined them.
Q. 62. Well did you see such indentations that I speak of in the ties where these tie plates were placed?
A. Yes.
Q. 63. How did the flanges in the Servis plates that you saw, run with reference to the tie?
A. Lengthwise of the tie, with the grain of the wood.
Q. 64. Have you any connection with the Santa Fe Railroad System at present in any way?
A. None whatever.

Cross-examination by Mr. Brown:

X Q. 65. How did you happen to come here to testify as a witness in these cases?

A. I was called on the telephone, by Mr. Reed.

X Q. 66. The counsel for the defendants in this case?

A. Yes, sir.

X Q. 67. And when was this?

A. I don't remember; I should say it was four or five weeks ago, perhaps longer.

X Q. 68. And was that the first request, directly or indirectly that you had had to testify in these cases?

A. Not indirectly.

X Q. 69. Other than by the telephone request of Mr. Reed, what request or appeal or intimation have you had and from whom, that you were to testify in these cases?

A. While at home in Denver, some two or three months ago,—yes, about two months ago, I received a letter from Mr. Collins, the Purchasing Agent of the Santa Fe road, asking if it would be convenient for me, the next time I came to Chicago, if I could call upon Mr. Reed, whose office was in the Rector Building, if so, he would tell me then what was wanted of me.

X Q. 70. And the letter from Mr. Collins, of the Santa Fe System, was the first intimation you had of this matter, was it?

A. Yes, sir.

X Q. 71. And it was that which ultimately led to your being here, was it?

A. Yes, sir.

X Q. 72. Was Mr. Collins' request supplemented by any re-
646 quest directly or indirectly, by or from Mr. W. E. Hodges, of the Santa Fe System?

A. No, sir.

X Q. 73. Do I understand you correctly to say that prior to your requisition for tie plates and the receipt of the one thousand tie plates in response to that requisition, which tie plates were installed in your division in the first two curves west of Sulzbacher station, you had no tie plates of any kind in use in your division; do I understand you correctly?

A. To the best of my recollection those were the first tie plates that I installed under my jurisdiction.

X Q. 74. And what is the fact as to whether or not at the date of that installation there were tie plates of any other design installed in your division?

A. To the best of my belief there were none on that division before that.

X Q. 75. And when you made the requisition for tie plates, you did not specify any particular kind, as I understood you?

A. No.

X Q. 76. And to whom was your requisition made?

A. I always made them out and sent them to the General Superintendent for his approval.

X Q. 77. Prior to receiving these 1000 tie plates were you consulted at all as to the character or design of the same?

A. No, sir.

X Q. 78. When did you first know that your requisition for tie plates had been honored?

A. Notified by Mr. Elliott, the Road Master.

X Q. 79. That was after he had received the plates, was it?

A. Yes, sir.

X Q. 80. Did Elliott install these tie plates at once or did he receive any instructions from you with respect to their installation in track?

A. My recollection is we talked the matter over and decided where they should be used. I don't know whether this was before or after they were received, but at some time we decided to use them at that particular point.

X Q. 81. Were you present when any of the one thousand tie plates were installed in track for the first time?

A. No, sir.

X Q. 82. About how soon after they were installed did you first see any of this one thousand tie plates?

647 A. Within a very few days, I can't say just how many.

X Q. 83. And about how long were these one thousand tie plates installed and in use in track before you went to Colorado?

A. I should judge it was a year or two. My recollection is it was something over a year, I won't be positive.

X Q. 84. And you left the Santa Fe system and went to the Colorado & Southern Railway Company in February, 1900?

A. Yes, sir.

X Q. 85. And you were made Superintendent with headquarters at Colorado Springs in 1894, were you?

A. Yes, sir.

X Q. 86. And with relation to the date June 1st, 1894, about when do you say these one thousand plates were installed and laid in track near Sulzbacher?

A. Within a year or two before that.

X Q. 87. Did I understand you to say that some tie plates similar to these one thousand were subsequently laid in track in the Glorietta Mountain division?

A. Yes, sir, that is my recollection.

X Q. 88. About when was that?

A. About the time I went to Colorado. There were some that had not been installed when I left, is my recollection.

X Q. 89. Some of the original one thousand?

A. No, some of a later request.

X Q. 90. Did Dan Elliott have anything to do with the Glorietta Mountain Division?

A. Yes sir, he was Road Master of that division.

X Q. 91. And he would have known or would have superintended the installation of the tie plates, would he not?

A. Yes, sir.

X Q. 92. About when was it that you made the requisition for other tie plates like this one thousand lot?

A. I should say some time in the year 1893.

X Q. 93. Was that requisition made in the usual and customary manner of requisitions in those days?

A. Yes, sir.

X Q. 94. And in writing?

A. Yes, all requisitions were written.

X Q. 95. Do you recall whether or not any written communication was sent to you in reply to or concerning that requisition?

A. No, I couldn't say as to that.

648 X Q. 96. Do you recall how many tie plates you specified in that requisition?

A. No, I can not say exactly; I think several thousand, though.

X Q. 97. And do you recall how many tie plates were furnished in response to that requisition?

A. No, I have no definite knowledge.

X Q. 98. Do you recall where they were furnished; that is, to whom they were sent?

A. I can not say whether they were billed to me or to Mr. Elliott, either one or the other.

X Q. 99. And there were only these two lots of tie plates, the one comprising the thousand that were installed west of Sulzbacher, and the other lot being in response to your later requisition, that were of this pattern which you have identified as similar to Exhibits B and C or were there other lots?

A. That is all I have any knowledge of. I went away and there might have others come afterward.

X Q. 100. And you can't give us any idea at this time, can you as to how many plates were furnished in the second lot?

A. No, I could not; I didn't give the matter as much personal attention as I did the first lot.

X Q. 101. And the second lot of tie plates of this character were installed where did you say?

A. South of Las Vegas, on what is called the Glorietta Mountain.

X Q. 102. Is that the first curve west of Las Vegas?

A. No, that is several miles south of Las Vegas.

X Q. 103. Do you recall making any other requisitions for this kind of tie plate?

A. No, sir.

X Q. 104. You inspected these tie plates in track on more than one occasion, I presume?

A. Yes, sir.

X Q. 105. Can you tell me why these tie plates broke at the shoulder?

A. Because they didn't have metal enough at that point.

X Q. 106. Was it during your connection with this same division of the Santa Fe system that track west of Sluzbacher was relaid and a heavier rail installed, or did that come later?

649 A. The heavier rail was not laid till after I went to Colorado.

X Q. 107. And what was the character of the tie on that section of the track where these one thousand plates were laid?

A. They were mostly treated pine ties.

X Q. 108. Do you picture to your mind's eye, this afternoon, the very first occasion when you inspected the track after these one thousand plates were installed near Sulzbacher?

A. I remember in a general way of going there.

X Q. 109. On that first occasion you saw this particular tie plate for the first time, did you?

A. It is my recollection. I don't think I saw them before they were in the track.

X Q. 110. And other than the occasions when you have examined these two Exhibits B and C, all the plates of this one thousand lot that you have seen, were in place in track, were they not?

A. I don't think they were all in the track the first time I went there. My recollection is part of them were in and part of them were piled along side of the track.

X Q. 111. Then I understand you to say on your direct examination that these tie plates were satisfactory to you?

A. Yes, sir.

X Q. 112. Did you ever thereafter have occasion to use other tie plates on any part of the road under your control?

A. Yes, I used some on the Denver division.

X Q. 113. What tie plates were those that you used on the Denver Division?

A. I don't know that I can give the exact name, I can describe the plate.

X Q. 114. Please do so.

A. It was a rolled plate, as I recollect about ⅜ inches thick in metal, with four flanges on the under side of the plate running lengthwise of the plate which would be lengthwise of the tie, and on the top a small indentation or corrugation running lengthwise of the plate.

X Q. 115. And were the tie plates which you have described which you used in the Denver Division of the Santa Fe, furnished you on your requisition?

A. Yes, sir.

X Q. 116. Why did you not make requisition for tie plates
650 of the Porter type, such as you had used at Sulzbacher in this one thousand lot?

A. I made requisition for such tie plates as we were required to use, that we were instructed to use.

X Q. 117. Then the selection of the type of tie plate was determined by some department of the Santa Fe System above you, or other than your office, was it?

A. Yes, sir.

X Q. 118. Did you ever make any requisitions for tie plates of the same type and design as the one thousand lot used at Sulzbacher while you were in charge of the Denver Division?

A. No, sir.

X Q. 119. Or did you make any requisition for such tie plates while you were connected with the Colorado & Southern Railway?

A. No, sir.

X Q. 120. Mr. Daniel Elliott, in his testimony in this case, has stated, in effect, (I am not quoting his exact words) that although he made requisition for a tie plate similar to those that were furnished in the first lot of one thousand, he never received any, other than that first lot of one thousand, but that subsequently, when the track was relaid with a heavier rail he moved the old rails from Sulzbacher to the curve west of Las Vegas, and carried with the old rails such of that original lot of one thousand tie plates as were then serviceable, and installed them at the curve west of Las Vegas. In view of that evidence isn't it possible that you are mistaken as to there being a second requisition for this type of plate and a second installation of new plates of this type?

A. I don't think there can be any mistake about making requisition. I am quite sure I approved of the requisitions he passed to me, and I always supposed they were filled according to the original requisition. As I said in a previous statement, I didn't give the later tie plates my personal inspection as I did the first lot, but until you make the statement I was certain we got other tie plates of the same kind; we certainly made requisition for them.

X Q. 121. All I want, Mr. Dyer, is to get at the facts definitely and not from mere hearsay.

A. Well, I am giving it from the best of my recollection, that is all.

X Q. 122. Mr. Elliott and you agree that this type of tie
651 plate was called for after the lot of one thousand were installed, and he has testified to a reinstallation of a portion of that first lot, and I want you to be certain in your evidence, if you can, as to whether or not the second installation to which you have referred of this type of plate, was of entirely new plates as the result of a new requisition, or whether it might be, as Mr. Elliott has said, merely the reinstallation of some of the original lot. Please give us now your very best recollection on this point.

A. I can not state positively that I saw, myself, any of the second lot of plates, but I was of the opinion that our second requisition was filled with the same type of plate. Mr. Elliott's statement would certainly be better than mine, because he did the work.

X Q. 123. In your answer to direct question 31 you say you remember "of making a requisition for several thousand, probably ten or fifteen thousand, I don't remember just how many" of this same kind of tie plate; have you any data or circumstance that enables you to fix this quantity as several thousand and probably twelve or fifteen thousand?

A. No, sir, I have nothing except my recollection of a conversation with the Road Master.

X Q. 124. Have you any idea how soon after the receipt of the letter written by Mr. Elliott, dated "1/25/3," Exhibit E, which you have identified, that you made the requisition to which you have referred?

A. No, I cannot state; probably very soon afterwards.

X Q. 125. Did you ever hear that one thousand lot of tie plates referred to by any other name than the "Potter" or "Porter" plate?

A. No, sir.

X Q. 126. Do you know, of your own knowledge, of any other instance where this type of tie plate has been in use in track other than the two instances to which you have testified this afternoon?

A. No, sir, I don't recollect of any.

X Q. 127. When you examined or inspected the track where these Potter or Porter tie plates were installed, just what was the character or nature of your inspection?

A. I generally made them upon agreement with the Roadmaster, we made them together.

X Q. 128. Yes, but I wanted to know just exactly what you did.

652 A. If we were going over the division on a special train, which we often did, we would stop and get off and go down on the track and examine them very closely. The first inspection was principally to see if they had embedded themselves properly. The ties were treated ties, and we wanted to see what effect they had on them. It is my recollection that he called my attention in regard to the indentation made by the flange, as not being as severe on the wood as the deeper flange that he had seen elsewhere. We had no other tie plates on that portion of the road at that time. And that was my observation. We also examined them with reference to the action of the chemical that we used in treating the tie, upon the metal, but I left there so soon after they were installed that I didn't notice any detrimental effect, the acid hadn't taken any action noticeable. There were spikes that had been in several years that were badly eaten by the chloride of zinc that we used. Very often we made track and bridge inspections on hand cars, we then inspected these plates and always found them in line, hadn't been forced out. I cannot recollect just how I come to see a tie with the plate off after it had been in use, but I remember that Elliott and I did examine one. It is my recollection that he either took one out of the track, himself, voluntarily, or that I asked him to. I think the tie was brought to Las Vegas. My recollection is I showed it to the General Superintendent, so that he could see just exactly that the plate had been in place and hadn't moved, hadn't shifted. The reason I can recollect those things more distinctly than at other times is because we had had a great deal of trouble on those curves, there and below, and Elliott and I became convinced that we had solved the difficulty by using these plates. The matter was talked about quite a good deal in our conferences, both there and at headquarters.

X Q. 129. You expressed to the officials at head quarters, I presume, from time to time, your favorable opinion of these tie plates in use at this point, did you not?

A. Yes, mostly verbally whenever they would come out over the road or when I happened to be at headquarters.

X Q. 130. And I presume some of the officials of the Santa Fe System of higher rank at that time than yourself, inspected these plates in track, did they not?

A. I think it is more than likely that they did.

X Q. 131. They at least saw them and knew they were in track? That is, those officials to whom you spoke, is not that so?

A. No doubt of it.

X Q. 132. This occasion when the tie that was taken out of
653 track with one of these tie plates, can you give us approximately the date of that?

A. No, sir, but it was several months after they were installed, might have been a year.

X Q. 133. Do you remember an occasion when Mr. Faulkner, of the tie and timber department of your system made an inspection of that part of the road? Do you remember such an occasion?

A. No, sir, I do not.

X Q. 134. You can not say whether or not this tie that you mention as having been taken out of track, was taken out to show to him, and to be sent to headquarters at Topeka in connection with his inspection report, can you?

A. No, sir, I cannot.

Mr. Brown: Complainant's counsel requests Defendants' counsel to have a search made of the records of the Santa Fe System and to produce if possible, the requisition or requisitions referred to by this witness for tie plates calling or intending to call for tie plates of the type and design of the one thousand plates referred to in the deposition of the witness, and to attach such requisitions to the deposition of this witness if found.

Mr. Reed: Counsel for defendants states that he has already requested such search for all requisitions connected with this matter, and the original letter; that he is advised that such search has been made and that it has not been successful, and that no other papers, letters or documents other than Exhibit E have been discovered.

Coss-examination closed.

Redirect examination by Mr. Reed:

R. D. Q. 135. Do you consider the tie plates B and C heavy or light for heavy traffic?

A. I consider them very light for the present day traffic.

R. D. Q. 136. I understood that you did not personally know whether under the requisition which you made for additional tie plates of this type, such tie plates were actually furnished?

A. I couldn't say from my own knowledge.

R. D. Q. 137. You recall making the requisition, however?

A. The Roadmaster made the requisition and I approved it.

R. D. Q. 138. Then in stating that such additional plates of this type were furnished, you simply gave your understanding or impression, did you?
654 A. Yes, that was the case.

R. D. Q. 139. Do you recall whether or not all of the ties on which these tie plates were placed, were treated soft wood ties, or whether there was an occasional oak or hard tie?

A. A certain percentage of the ties on curves sharper than three or

four degrees, were oak. To the best of my recollection about 25 per cent. were oak.

R. D. Q. 140. And were these two curves above the percentage in requiring oak?

A. I cannot remember the degree of curvature, but I do remember of there being some oak ties in these curves.

CHAS. DYER.

Whereupon an adjournment was taken to Wednesday, February 23, 1910, at 10:30 o'clock A. M.

February 23, 1910—10 o'clock a. m.

The further taking of depositions adjourned to March 1, 1910, at 10 o'clock A. M.

March 1, 1910—10 o'clock a. m.

The further taking of depositions adjourned to March 2, 1910, at 10 o'clock A. M.

March 2, 1910.

The further taking of depositions adjourned to March 3, 1910, at 10:30 o'clock A. M.

March 3, 1910—10:30 o'clock a. m.

Met pursuant to agreement.

Present: Mr. Reed and Mr. Brown, and Mr. Cooke.

JOHN V. COWLING, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation?

A. John V. Cowling; 115 Adams street; manufacturer's agent.

Q. 2. In what way, if any, are you connected with the Beaver Dam Manufacturing Malleable Iron Company?

655 A. Sales agent.

Q. 3. Where is that company located and what, in a general way, is its business?

A. At Beaver Dam, Wisconsin; manufacturers of general malleable iron castings.

Q. 4. Please state whether that company manufactures tie plates?

A. They do.

Q. 5. How long have you been connected with that company as sales agent?

A. Eighteen months.

Q. 6. Prior to the time of your connection with the company as sales agent, were you acquainted with it and its manufacture, in a general way?

A. Yes.

Q. 7. How long have you been in the railroad supply business?

A. Twenty-three years.

Q. 8. Please look at the catalogue which I now show you, and state whose catalogue it is, and for what year?

A. It is a catalogue showing tie plates and rail braces manufactured by the Beaver Dam Malleable Iron Company and issued in 1908.

Mr. Reed: The catalogue referred to by the witness is offered in evidence as Defendant's Exhibit T.

Mr. Brown: Objected to as incompetent, irrelevant and immaterial.

Q. 9. Please state whether the drawings in this catalogue purporting to show tie plates, represent tie plates manufactured and marketed by the Beaver Dam Malleable Iron Company?

A. They show part of their product, not all.

Q. 10. But are the tie plates illustrated in this catalogue actually made and marketed by the Beaver Dam Malleable Iron Company?

A. They are.

Q. 11. Please look at the tie plates which I have marked Defendants' Exhibit- O^{21}, O^{22}, and O^{23}, and state by what concern, if you know, are they manufactured?

A. They are all manufactured by the Beaver Dam Malleable Iron Company.

Q. 12. Please state if you can what railroad or railroads the Beaver Dam Malleable Iron Company has manufactured for and
656 supplied with tie plates like Exhibits O^{21}, O^{22}, and O^{23}?

A. The Chicago, Milwaukee & St. Paul Railway, principally.

Q. 13. To what extent, or in what quantity, if you know, has the Beaver Dam Malleable Iron Company supplied the Chicago, Milwaukee & St. Paul Railroad Company with tie plates like those of the three exhibits?

A. The tie plates shown are the Chicago, Milwaukee & St. Paul standard, and the Beaver Dam Malleable Iron Company have been furnishing these exclusively for the past two years, to my knowledge. Their consumption is in the neighborhood of a million a year.

Mr. Reed: Said tie plates referred to are offered in evidence by counsel as Defendants' O^{21}, O^{22} and O^{23}.

Mr. Brown: The Exhibits offered in evidence are objected to as incompetent, irrelevant and immaterial and also because there is no evidence tending to show when the same were manufactured and put into use.

Q. 14. What is the character and what is the method of manufacturing these tie plates like the Exhibits just referred to?

A. They are made in molds from brass patterns or other metal.

Q. 15. What is the name, if any, they bear on the market?

A. Malleable iron tie plates.

Q. 16. And they are cast or molded and not rolled, I understand?

A. They are cast.

Q. 17. Have you at any time, and if so please state about when,

seen any tie plates of this character in the tracks of the Chicago, Milwaukee & St. Paul road?

A. Frequently, and at various points.

Q. 18. Please state some of the places and about when? Or during what period?

A. Oconomowoc, Wisconsin, in the fall of 1908; Dayton's Bluff, Minnesota, in 1908, 1909 and 1910; Pacific Junction, Wisconsin, in 1908, 1909 and 1910 and other points.

Q. 19. Are you in any way interested in this suit?

A. No.

Mr. Brown: The entire deposition of the witness is objected to as irrelevant and immaterial to any issue joined in this case, and
657 as incompetent, and notice is given that motion will be made to strike the same from the files. No cross-examination.

JOHN V. COWLING.

Adjourned to 2:30 o'clock P. M. of the same day.

March 3, 1910—2 o'clock p. m.

Met pursuant to adjournment.
Present as before.

JOHN DOVE ISAACS, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.

A. John Dove Isaacs; residence, Chicago; consulting engineer for the Harriman Lines.

Q. 2. Please state what railroads are included in the Harriman Lines?

A. Union Pacific, Southern Pacific, Oregon Railroad & Navigation Company; Oregon Short Line. These are the main lines and there are numerous subordinate lines besides.

Q. 3. And for what period have you occupied your present position?

A. Since December first, 1905.

Q. 4. Do these lines which you have enumerated, as comprising the Harriman Roads, have the same standard in track construction and equipment?

A. Yes.

Q. 5. And I will ask you to state rather briefly what your duties are in your position in reference to the standard of equipment?

A. My duties are to advise with the operating officers on all standards of track equipment; to suggest standards to correspond with the Chief Engineers and other men in charge of track with regard to the methods with which the standards work out in practice and in general to take care of standardizing of track and physical properties; that doesn't include locomotives or anything of that kind.

Q. 6. Prior to your present position were you connected in any

way with any of the lines which now make up the Harriman system?

658 A. Yes, the Southern Pacific Company.

Q. 7. In what capacity and for how long?

A. I began with the Southern Pacific Company in 1875 as a draughtsman at the machine shops in Sacramento, and afterwards became chief draughtsman and then assistant superintendent of bridges and buildings, and after that assistant engineer of maintenance of way, which office I held until promoted to my present position.

Q. 8. At what time did you begin to enter upon your office as assistant engineer of maintenance of way of the Southern Pacific?

A. For probably two or three years after leaving the bridge and building department,—say three or four years, I was chief draughtsman of maintenance of way.

Q. 9. And about what time did you become engineer or assistant engineer of maintenance of way?

A. Well, speaking from memory, I have the record at my office, but speaking from memory it was about 1894 or 1895.

Q. 10. When did you first become acquainted with tie plates for railroads?

A. Well, I had seen a good many of them used as assistant superintendent of bridges and buildings, but had nothing to do with the design or use of them until I became chief draughtsman of maintenance of way department.

Q. 11. Do you recall the name of the first tie plate that you saw in use on the Southern Pacific line?

A. The first that I ever knew anything about was a Servis.

Q. 12. Can you describe this plate?

A. It was a flat top plate without a shoulder and with ribs parallel with the tie underneath.

Q. 13. And could you tell about the date that you first saw this tie plate in use on the Southern Pacific road?

A. Well, not exactly, but I think about 1890.

Q. 14. Was there any change in the kind of tie plate used on the Southern Pacific, if so, please state the kind of plate that followed the Servis in order?

A. We changed to what we called the Sacramento plate, which was a plate flat top and bottom, with a shoulder on the outside of the flange of the rail, and without ribs.

Q. 15. Look at Defendants' Exhibit G, in this case, and state whether or not this is a sample of the Sacramento plate?

A. This is similar to the Sacramento plate, but is of a later design than that first used. The original was somewhat lighter and smaller than the sample.

659 Q. 16. About what date, if you can recall, was the Sacramento plate first used on the Southern Pacific?

A. They were first rolled at Sacramento in the summer of 1891, and were used that fall.

Q. 17. About how long did the Southern Pacific railroad continue

to use the Sacramento plate on its lines? I mean, install them as a standard.

A. For six or seven years.

Q. 18. Did you then make any change in the standard of the Southern Pacific tie plate, if so, what plates were used?

A. We abandoned, at that time, the use of the Sacramento plate, and used plates of other make for a while.

Q. 19. Will you be kind enough to give us the names of the plates and as you do so, describe them?

A. We used the Wolhaupter, the Glendon, Q. & W., the Hart, Diamond State, and the improved Servis.

Q. 20. Please describe, briefly, each of these plates.

A. The Wolhaupter was a plate corrugated on top parallel with the tie, and having ribs on the under side also parallel with the tie, and with what we call side lips; no shoulder. The Glendon had a flat top with counter sinks, ribs under the bottom with side lips all parallel with the tie, no shoulder. The Q. & W., was the same as the Wolhaupter without the side lips. The Hart was the same as the Wolhaupter with the exception that the corrugations were very flat and ran diagonally to the surface of the plate. The Diamond State was flat on top, otherwise the same as the Wolhaupter or Glendon. And the improved Servis was flat on top, otherwise the same as the Q. and W. None of them had a shoulder.

Q. 21. In all these plates that you have just referred to and described, did the lower flanges run parallel to the tie?

A. Yes.

Q. 22. Were these plates that you have just described used in succession, or contemporaneously?

A. Contemporaneously.

Q. 23. And for about how long did the Southern Pacific company continue to use these various kinds of plates which you have just described?

A. Four or five years.

Q. 24. That would be until 1902 or 1903.

A. Well, say until 1903.

Q. 25. Was there any change, then, if so, what kind of a plate was adopted as standard?

A. We went back to the Sacramento type.

660 Q. 26. Please state what if any objections were found to the Wolhaupter, Glendon, Q. and W., Hart, Diamond State and improved Servis?

A. The principal objection to the use of any ribbed plate was injury to the tie.

Q. 27. You may give any objections that you found to the plates which were used in this period of about five years prior to 1903.

A. In addition to injury to the tie, they were expensive to apply and difficult to get to a good bed on the tie.

Q. 28. Is Exhibit G a sample of the Sacramento that was used when you re-adopted it in 1903?

A. Yes.

Q. 29. About how long after re-adoption in 1903 did the Sacramento plate continue to be used as standard?

A. Until September, 1904.

Q. 30. Prior to change from these various plates, the Wolhaupter, Glendon, Hart, Diamond State, improved Servis and Q. and W., were there any tests or observations or experiments made so that you could determine their merits or demerits?

A. I couldn't say definitely with regard to any particular one, but generally we were in the habit of giving them, as we are now, trial orders for a sufficient number of any new appliance to demonstrate its merits before adopting it as standard.

Q. 31. But about 1903 you recurred to the Sacramento type or style.

A. Yes.

Q. 32. Was this abandonment of the various styles which you used for about five years, as a result of any observation or testing, especially, or did the change result simply from the general observations which the officials of the road made?

A. In practice there were objections to them, which I have already stated.

Q. 33. About September first, 1904, was there any change made in the standard of tie plates, if so, what?

A. We got out a new design for a Sacramento plate very much heavier than the previous one.

Q. 34. Wherein did it differ?

A. Only in dimensions.

Q. 35. How long did this last heavy Sacramento plate continue standard?

A. I don't think it was ever used.

661 Q. 36. Have you a blue print or drawing of it?

A. There is a drawing of it, yes. (Handing counsel drawing.)

Q. 37. Please look at the drawing or blue print which I will mark "Exhibit U," and state what that is, and make any explanation which you wish about the date.

A. This is a drawing of a plate made under my direction and submitted to a meeting of the Harriman engineers in Chicago in September, 1904. It was sent around to the various general managers of the Harriman line for adoption as a common standard, but was never so adopted because I was informed that there were certain objections made to it as being wasteful in material and therefore in cost.

Q. 38. Please state what if any modifications were made, and what if any form was adopted as standard after this modified Sacramento plate, or rather, this heavier Sacramento plate, was discussed?

A. I had made plans of a tie plate similar in section to that shown on Exhibit U, but in order to economize material with rectangular depressions in the upper face. One of these I remember very distinctly had the depression in the form of a checkerboard, alternate sunken and elevated squares. Later this was returned to me by my superior officer with instructions to omit the squares and substitute

longitudinal grooves, which was done and the tie plate so designed was afterwards made a common standard.

Q. 39. Look at the drawing which I will mark Exhibit V, and state what that is?

A. That is a plan of a tie plate developed in accordance with my previous testimony, from Exhibit U, and adopted in April, 1905, certain revisions being made in September, 1905.

Q. 40. Has the tie plate shown by Exhibit V been a standard of the Harriman lines since September, 1905?

A. Yes.

Q. 41. And is it the present standard?

A. Yes, for that size of rail, 75 and 80 pounds.

Q. 42. And the standard for other rails differ simply in dimensions?

A. That is all.

Q. 43. Please look at the drawing or blue print which I will mark Exhibit W, and state what it represents?

A. That represents the Southern Pacific, Sacramento tie plate for 75 pound rail, as issued in 1903.

662 Q. 44. Please look at the drawing which I will mark Exhibit X, Defendants' Exhibit X, and indicate to us what the various drawings thereon represent, and in so doing you may start at the transverse section on the left hand side which I will mark X^1, and follow down the column and then to the top of the next.

A. X^1 represents the Q. and W. tie plate as used and proposed to be used by the Harriman lines in February, 1904. X^2, the Wolhaupter as used and proposed to be used by the same; X^3, the Glendon as used and proposed by the same; X^4, the Servis, in the same way; X^5, the Diamond State, and X^6, the Hart.

Q. 45. And the three drawings across the top of the page represent what?

A. They represent the plans of these various tie plates showing the punching for spikes.

Q. 46. And are these drawings approximately representative of the Wolhaupter, Glendon, Q. and W., improved Servis, Diamond State, and Hart plates that you testified about a short time ago?

A. Yes, at that time. Of course these plates developed in size and thickness from time to time, just as the Sacramento plate did.

Q. 47. To whom did you transmit or turn over your suggestions and sketches when you were modifying the last and heavy Sacramento plate in order to make it lighter?

A. Mr. J. H. Wallace.

Q. 48. And who were the engineers who participated in these consultations when these modifications were made?

A. The Chief Engineers and engineers of maintenance of way of the Harriman lines.

Q. 49. What were their names?

A. Berry, Ashton, Kennedy, Baldwin of the Alton and Dickinson of the Kansas City Southern; Cushing.

Q. 50. From whom did you receive the suggestion or instruction,

if anyone, to make the grooves or channels on the top of the plate as it was finally adopted?

A. Mr. Wallace.

Q. 51. And who, if anybody, suggested to you the method or design of lightening the plate by making the alternate sunken squares, or was that your own work?

A. I don't remember distinctly. Mr. Wallace might have suggested it or it might have been my own, I don't remember distinctly.

663 Q. 52. But was this suggestion made by one of the engineers or persons connected with the road?

A. I can't answer that question from my own knowledge.

Q. 53. I do not mean the ultimate suggestion of the complete channels, but the first suggestion of the alternate sunken squares?

A. As I remember, it was made by either Mr. Wallace or myself, as far as I am concerned it was either Mr. Wallace or myself, for we talked it up.

Q. 54. Then subsequently the design was returned by Mr. Wallace with the suggestion that the grooves or channels on top be made continuous?

A. With the instruction that it be made continuous, yes.

Q. 55. Have you any interest in this suit?

A. None whatever.

Q. 56. And were you subpœnaed to attend?

A. I was.

Mr. Reed: The drawings and blue prints referred to as Exhibit-U, V, W and X, including X^1 to 6, both inclusive, are offered in evidence and marked as above indicated by defendants' counsel.

Cross-examination by Mr. Brown:

X Q. 57. If I understand correctly the drawing of the Sacramento plate that had the checkerboard construction on the top surface was prepared some time between September 1, 1904, and September 1, 1905, is that correct?

A. Yes.

X Q. 58. And can you give the date of that drawing any more definitely at this time?

A. I know that it was prior to April, 1905, and after September, 1904.

X Q. 59. Were any of the checkerboard style of plates rolled?

A. No.

X Q. 60. Or otherwise fabricated?

A. No, not to my knowledge.

X Q. 61. Then in all there were four styles of Sacramento plate, namely, the first one, relatively thin, that was used for six or seven years; then the second one that was adopted as you say in 1903; the third one which was heavier but of which none were ever made, and fourth, the checkerboard design; is that correct?

664 A. That is substantially correct, yes.

X Q. 62. And after these four came the present standard

which you have identified by reference to the blue print Defendants' Exhibit V?

A. That is right, yes.

X Q. 63. Have you any idea how many of the first style of Sacramento plates were used?

A. I couldn't guess at it; we probably began with something like a million a year, and increased it up to the present time—we probably got up to a couple of million a year, but that is a wild guess.

X Q. 64. Can you state which one of the six plates that were used between the period of use of this first Sacramento plate and 1903 when you began to use the second Sacramento plate, was purchased and used first upon your road?

A. I cannot.

X Q. 65. So far as you know each of these six plates, the Wolhaupter, the Glendon, the Q. and W., the Hart, the Diamond State and the improved Servis, were used contemporaneously during the period from about 1899 to 1903?

A. On Exhibit X the plates, X^1, X^2 and X^3 were used contemporaneously on the Southern Pacific line; the remaining three, X^4, X^5 and X^6 were placed on the drawing at the request of the engineers of the other Harriman lines with which at that time I had no official connection. We used these three, X^1, X^2, and X^3 indifferently on the Southern Pacific.

X Q. 66. And you used none of Servis, the Diamond State and the Hart plates on the Southern Pacific?

A. Yes, we used some of the X^4, the Servis; but if any of the other two, they were only for experimental purposes.

X Q. 67. And as between the four plates used on the Southern Pacific you cannot state which one was used first?

A. No, I cannot.

X Q. 68. Tell us, please, where and by whom each of these six styles of plates were rolled, if you know?

A. I don't know that.

X Q. 69. You do know, do you not, that neither of these six styles was rolled by the Sacramento mill?

A. I am quite sure that none of them were.

X Q. 70. The Sacramento plates which you have mentioned that were used by the Southern Pacific, were rolled in the Sacramento mill, and derived their name from that fact, is not that true?

A. Yes.

665 X Q. 71. Have you any idea, approximately, how many of each of these six styles of plate were used?

A. I have not.

X Q. 72. During the two periods in which the Sacramento plate was used, namely the first period of six or seven years and the second period from 1903 to September, 1904, were any other types or styles of tie plates purchased or used?

A. I believe that some small lots of other makes were purchased during the first period for experimental purposes. But none that I call to mind during the second period.

X Q. 73. For the benefit of the court, will you please explain, the

distinction that you have in mind between the tie plates that were adopted as "standard," and any tie plate that was purchased or used for "experimental purposes"?

A. A standard plate is one which has been adopted and approved for general use, and can be ordered by the operating officials without permission of my office or that of my superior. In other words, they may use that as much as they like; if they want to use anything else they must have a special permit. For experimental purposes, a certain leeway is allowed to the operating officials by which small quantities of any device can be ordered for the purpose of trying them out, but usually permission to do so is requested if the apparatus involves any considerable amount of money.

X Q. 74. Take, for example, the subject of tie plates, what would you consider "a small quantity" that would be used for experimental purposes?

A. Sufficient to install five miles of track.

X Q. 75. Anything less than that number would hardly be a fair test of the plate, would it?

A. No, considering curvature and tangents and other conditions, we would hardly consider an experiment on any smaller scale than five miles of track worthy the trouble and expense of trying.

X Q. 76. And it would take approximately between five and six thousand plates per mile to equip a track, would it not?

A. Yes, there are 2,800 ties to the mile and two plates to the tie.

X Q. 77. When and by whom were the first plates of the present standard rolled, I mean the standard shown on Defendants' Exhibit V, and which has been called in this record the Harriman plate?

A. I cannot tell you where they were first made; I have nothing to do with purchasing.

666 X Q. 78. Plates of this style are being used at the present time on your system, are they not?

A. Yes.

X Q. 79. Do you happen to know whether the Harriman system purchases any tie plates of this present standard as shown on Exhibit V, of the complainant in this case, the Railroad Supply Company?

A. From my personal information I don't actually know, but I understand they purchase a very large number from them. I might qualify that by saying I really do know because the question of inspection of them at the La-kawanna mills was recently referred to me.

X Q. 80. Do you happen to know whether any tie plates of this design, that is, the present standard as shown on Defendants' Exhibit V, have been rolled at the Sacramento mills?

A. I think not.

X Q. 81. Or at the Laramie mill?

A. I think some were rolled at the Laramie mill, that is, in accordance with Exhibit V before revision.

X Q. 82. Just what do you mean by "before revision"?

A. After the original Exhibit V was made the raised figures showing the weight of the rail to which the plate was applicable were

placed on the drawing. That is the only change I can call to mind now, in the plate.

X Q. 83. Have you any idea about when plates of this type were rolled at the Laramie mill?

A. No, I do not. I have nothing to do with that part of it at all. In fact I would like to say that I am not absolutely sure that that drawing was followed at Laramie.

X Q. 84. Will you please look at the catalogue of the Railroad Supply Company, which has been introduced in evidence and marked "Complainant's Exhibit 21, Complainant's Yellow Covered Catalogue," and compare the picture of a tie plate which is shown in perspective on the next to the last page, and to which the words "flat bottom, corrugated top, shoulder tie plate" are given; and also look at Defendants' Exhibit blue print V, which shows the Harriman plate in section, and state whether they represent the same plates?

A. Yes.

X Q. 85. That same Harriman plate is shown on page 14 in Complainant's Exhibit No. 23 Track, and a modification of it on page 15, is it not?

A. Yes.

667 X Q. 86. Please state again the thickness of the Sacramento plate as first used?

A. Don't remember that.

X Q. 87. It was a light plate, was it not, as compared with the present standard?

—. ——.

X Q. 88. I notice on the exhibit drawing X that each of the plates there shown, with the exception of the Hart, is indicated as being a quarter of an inch thick, and the Hart plate is 9/32 at the center, but of a quarter of an inch thick at the spike hole. These were the thicknesses of the plates as used, as you remember; is that right?

A. Approximately. This plan is proposed to be adopted as a standard, at the time it was dated it was adopted as a standard, and the thickness may have been slightly changed from what was actually in use before that. This plan was the outcome of the meeting of the Harriman engineers at Chicago in the summer of 1903, but the plates that were used concurrently about that date were practically of this thickness.

X Q. 89. I observe on this drawing Exhibit X, a memorandum as follows: "Note. The minimum thickness of the plates, at any point, must be ¼ inch." Do you recall just why that note was put on this drawing?

A. No, but it was probably the judgment of the engineers that no tie plate should be thinner than a quarter of an inch.

X Q. 90. And prior to the adoption of these common standard tie plates, as shown on this drawing Exhibit X, plates had been used that were a quarter of an inch only, or perhaps less, in thickness, I suppose?

A. Yes.

X Q. 91. And from experience with the use of such plates in

track such plates were considered too thin; that was the judgment, was it not?

A. Yes, sir.

Cross-examination closed.

Redirect examination by Mr. Reed:

R. D. Q. 92. Do you know whether any of the style of plates shown by Exhibit V have been rolled at any of the Harriman lines' mills.

A. I am of the opinion that plates similar to the style shown in Exhibit V have been rolled at the Laramie mills.

668 R. D. Q. 93. For the purpose of getting it into the record I wish you would describe the plate shown in Exhibit V, as to its shape?

A. A plate flat on the bottom, without ribs or projections; flat on the top with sunken grooves parallel with the direction of the rail having a shoulder on the outside of the flange of the rail and beveled edges, parallel with the rail.

R. D. Q. 94. What was the purpose which you had in mind or was understood by you of the sunken squares that were sketched at the time of the modification?

A. To save weight.

R. D. Q. 95. And what is the purpose, if you know, of the groove in the top of the present standard?

A. The same thing.

R. D. Q. 96. Will you please tell us what connection, if any, Mr. J. H. Wallace had with the Harriman lines?

A. He was Engineer of Maintenance of Way of the Southern Pacific Company from 1901, until, I think, 1908.

JOHN DOVE ISAACS.

Whereupon an adjournment was taken to Plymouth Building, 305 Dearborn Street, March 4, 1910, at 10:30 o'clock A. M.

Plymouth Bldg., 305 Dearborn St., Chicago.

March 4, 1910—10:30 o'clock a. m.

Met pursuant to adjournment.

Present as before.

LUCIUS B. SHERMAN, a witness called on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.

A. Lucius B. Sherman; residence, Chicago; occupation, Western Manager, Railway Age Gazette, 305 Dearborn street, Chicago, Illinois.

Q. 2. How long have you occupied that position?

A. Nine years.

Q. 3. Are you acquainted with a publication styled the Railway Age Gazette?

A. Yes.

669 Q. 4. When did the publication of the Railway Age Gazette under that title, begin?

A. June 5, 1908. The Railroad Gazette and the Railway Age were consolidated June 5, 1908, and the title Railroad Age Gazette was given the consolidated publication. On January first, 1910, the name of the publication was changed to Railway Age Gazette.

Q. 5. Prior to June 5, 1908, were you connected with the Railroad Gazette?

A. Yes.

Q. 6. In what capacity?

A. Western Manager.

Q. 7. For how long prior to that and where was the Railroad Gazette published?

A. Fifty-four years; Chicago, first, then New York.

Q. 8. And how long were you connected with the Railroad Gazette?

A. Prior to June first, 1908, eight years.

Q. 9. Have you the files of the Railroad Gazette in your office?

A. Yes.

Q. 10. Please look at the volumes styled on the back "Railroad Gazette, Vol. 21, 1889," "Railroad Gazette, Vol. 22, 1890" and "Railroad Gazette Vol. 24, 1892," and state what they are?

A. These three volumes are bound volumes of the Railroad Gazette containing the reading pages only, for the years named.

The same are marked for identification with the date March 4, 1910, and Kate S. Holmes, Notary Public.

Q. 11. Please look at the volumes marked on the back "Railroad Gazette, Vol. XXVI, 1894, Advertisement," "Railroad Gazette, 1895, Advertisements" and "Railroad Gazette, Vol. XXX, 1898, July to Dec. —," and state what those are?

A. These are bound volumes of the Railroad Gazette for the years mentioned, and contain both the reading pages and the advertising pages.

Q. 12. Prior to June 1, 1908, were you acquainted with a publication styled "Railway Age and Northwestern Railroader"?

A. Yes.

Q. 13. In what capacity if any were you connected with it?

A. I was not connected with this publication in any capacity, I simply had knowledge of it.

670 Q. 14. Do you know about how long it was published?

A. Well, the Railway Age was published for a number of years in Chicago, and the Northwestern Railroader for a number of years in St. Paul; they then got together and was published under the name "Railway Age and Northwestern Railroader."

Q. 15. Please look at the volumes marked "Railway Age Advertisements, 17, 1892," "Railway Age Advertisements, 1893," "Railway Age, 17, 1892," and "Railway Age, 18, 1893" and "Railway

Age Advertisements, 16, 1891" and state what your knowledge is of those volumes?

A. They appear to be bound volumes of the publications mentioned for the years mentioned, and contain reading pages and the advertising pages bound separately as noted in the question.

Q. 16. Are these volumes a part of your office files?

A. They are.

Mr. Reed: The two volumes of Railroad Gazette advertisements, 1894 and 1895, and the volume Railroad Gazette, XXX, 1898, July to December, and the three volumes of advertisements of Railway Age and Northwestern Railroader, the two volumes, 1892 and 1893, Railway Age and Northwestern Railroader, are all marked for identification, "March 4, 1910, Kate S. Holmes, Notary Public."

Q. 17. From your knowledge of the Railway Age and Northwestern Railroader, what would you say to these five volumes which you have referred to being the genuine copies of the copies which were printed and circulated at the times indicated?

A. They are, to the best of my knowledge and belief.

LUCIUS B. SHERMAN.

Mr. Reed: Counsel for defendants offer in evidence the cuts or drawings shown in the Railroad Gazette Vol. 22, 1890, issued June 6, 1890, page 399, and will procure a reproduction of the same, either by an experienced and competent draughtsman, or by photography.

Counsel for defendants also offer and read into the record a paragraph on page 398 of said issue of June 6, 1890, headed "Experimental tie plates, Pennsylvania Railroad," which is as follows:

"The tie plates which are shown in this issue were designed at Altoona and have been in experimental use for more or less time on the Pennsylvania Railroad. Figs. 1, 2 and 3 show the
671 wrought iron tie plate, and Figs. 4, 5, 6 and 7, the tie plate as made in malleable iron. This is made about 8 in. long by 10 in. wide, and varies in thickness from ½ in. on one side to a little over ¼ in. on the other. It is designed to first fasten the tie plate to the rail and then spike it to the tie. This practice stops to a considerable extent the rattle of the plate and tie. It will be seen that in both forms of plate, provision is made for taking up slack by means of a bolt and nut, so that the tie plate and rail can always be held in close contact, and the theory is that any movement takes place between the base of the plate and the tie rather than between the base of the rail and the plate, as would be the case if the plate were made fast to the tie alone.

It will be seen that the plates give an inward cant to the rail. This practice is very common on European roads and the reasons for it are obvious, viz., that it helps to take up the outward thrust of the wheel, to lessen the flange wear, and to make a better bearing for the coned wheels on the head of the rail.

The rolled wrought iron plate seems to have given (page 399) better service so far than the malleable plate. The construction of

these plates is shown so clearly in the cuts as to require no further description. Fig. 5 shows an end elevation and plan view of the clip used with the malleable iron plate."

The page of cuts or drawings is identified by being marked "Defendants' Exhibit AA, Kate S. Holmes, Notary Public." Defendants' counsel give notice that a number of the references in the publication identified have been discovered since the filing of the answer, and within the last week, and that application will be made in due course, to amend the answer in conformity therewith.

Mr. Brown: Complainant's counsel objects to the exhibits offered in evidence, and to all evidence relating thereto, because not set up in the answer, and also as irrelevant, incompetent and immaterial.

It is understood that this same objection is made and will apply to all other publications marked for identification, offered in evidence as exhibits or referred to in evidence, that have not been set up in the answer or otherwise noticed to the complainant by the defendants, with the same force and effect as if this objection be spread upon the record in connection with the offer or the evidence of any particular exhibit, the objection being made general at this time, for the purpose of saving time.

672 Notice is also given that a motion will be made to strike the exhibits and the testimony relating thereto from the record, for the reasons above given.

Mr. Reed: Counsel for defendants offer in evidence drawings in issue of March 25, 1892, of Railroad Gazette found on page 221 thereof, the same being marked "Defendants' Exhibit BB, Kate S. Holmes, Notary Public."

Mr. Brown: Same objections.

Mr. Reed: Also the article and drawings connected therewith shown in issue of July 8, 1892, of the Railroad Gazette, page 507, the same being marked "Defendants' Exhibit CC, Kate S. Holmes, Notary Public."

Mr. Brown: Same objections.

Mr. Reed: The said article is as follows:

"A new Tie Plate and Spike." The progress of education in the use of tie plates is well illustrated by the great variety of designs which have been brought forward within the last two or three years. The fact that inventors have been so active and prolific in this field is a fine tribute to the energy with which the cause of the tie plate has been pushed by the people who control the only one that has been yet largely introduced. The case illustrates the fact that we like occasionally to mention that railroad men owe a good deal in the way of education, to supply men, although they do not often like to admit it.

"The tie plate illustrated was designed and is patented by Mr. James Churchward, and is sold by the Central Oil and Supply Co., Whitehall Street, New York. It is a rolled steel plate about ¼ in. thick and 8 in. x 6 in. or 9 in. x 6 in. area. It has a shoulder about ¼ in. high and six lugs on the bottom, each one of which is about 1 in. long at the base, ¾ in. long at the edge and ½ in. deep. Special rolls have been designed to manufacture this plate, for, as

will be imagined, rolling up the lugs is rather a nice process. They are formed first as ribs in grooves on the rolls, until the finishing pass, when the rolls are provided with chambers instead of grooves.

The advantages of a shoulder are sufficiently obvious. On a plate with a plain upper surface the shearing strain brought on the outside spikes, particularly on curves, is very great, and we have been informed of cases in which many consecutive spikes have been sheared off. The lugs on the bottom of the plate are designed to hold the plate from shifting, and, in fact, would add greatly to the hold of the spikes. The claims made are naturally that the
673 plate prevents the tie being cut, preserves the gauge and prevents the shearing of the spike. The lugs are carefully proportioned to completely fill the indentation that they make in the tie, so as to prevent water collecting there and forming a starting point for decay. We do not propose to enter again into any general discussion of the subject of tie plates, but present this new device with considerable pleasure, for it seems to have excellent features."

Mr. Reed: Counsel for defendants also offer in evidence the article entitled "The Goldie Tie Plate," on page 889 of the Railroad Gazette of November 11, 1892, including the cut therein, the same is marked "Defendants' Exhibit DD, Kate S. Holmes, Notary Public."

Mr. Brown: Same objections.

Mr. Reed: The letter press is as follows:

"The evolution of the tie plate goes on, and the one now illustrated is the latest result that we have seen. It is the design of Mr. William Goldie, the inventor of the well known Goldie spike, and is made by Messrs. Dilworth Porter & Co., Ltd., of Pittsburgh. This company announces that it has commenced the manufacture of the Goldie tie plate on a large scale, and that it rolls the plate in its own mills, of the best soft steel and under careful supervision, to insure uniformity both of material and manufacture. (Here appears a cut in perspective of a tie plate with a shoulder on the top, a flat top and two lower ribs parallel to the shoulder, with two spike holes. Below it the words 'The Goldie Tie Plate.' The article then continues:) The plate is so well shown in the cut that description seems superfluous. It is made ¼ in. thick, 8½ in. long and from 4 to 6 in. wide as ordered. It is rolled so as to be slightly concave on the upper side at the middle of the base of the rail, and convex to the same extent on the lower side, and the makers claim that exhaustive experiment has shown that it has less tendency to buckle than any other plate now on the market.

It will be observed that the plate has a shoulder to take the outward thrust of the rail; also, that it has two flanges or ribs with sharp edges which enter the tie at right angles to the grain of the wood. A powerful resistance to movement of the plate is thus secured, while it is claimed that the indentations in the tie being entirely covered by the plate will not collect moisture and thus start decay."

Counsel for defendants also offer in evidence the article entitled "The Elastice Tie Plate," on page 160 of the issue of March 8, 1889, of the Railroad Gazette, and the cut accompanying the same,
674 which is marked "Defendants' Exhibit EE, Kate S. Holmes, Notary Public."

Mr. Brown: Same objections.

Mr. Reed: The letter press of the article is as follows:

"In a paper read before the Institution of civil engineers recently, Mr. C. P. Sandberg described a steel tie plate in considerable use experimentally in Sweden. This plate is shown in the illustration herewith, and requires but little description. The clips clasp the rail flange when the plate is at right angles to the rail. By slipping the plate off the tie and turning it 45 deg., it can be removed without disturbing the rail. The provision for securing an elastic action is apparent. Those portions of the plate on which the rail rests are bent up slightly, and thus form a spring. The plate can be fastened to the ties by any of the usual methods.

This tie plate was put in use early in 1883 on the Ystad-Eslof Railroad in Sweden when about one hundred wooden ties were taken out and replaced by longitudinal rock sleepers, with the elastic plate. The experiment is reported to have been (here is a picture of the plate) entirely successful. The tie plate has answered every purpose for which it was intended, and has lost none of its elasticity. The noise is diminished and the motion of the trains made smoother. On another Swedish road these tie plates have been in use on wooden ties in a few thousand feet of track for five years. The general superintendent states that the plates have lost none of their elasticity and none have been broken. We have no statement of the nature of the traffic on these two roads, the weight of the locomotive and cars, or the dimensions of the plates. The principle of this device would seem to be particularly applicable to iron ties or to track on bridges and elevated railroads. It is suggested by the inventor that the ties could be entirely dispensed with in tunnels and rock cuts by smoothing the face of the rock and putting the plate directly upon it.

The bearing of the use of a tie plate upon the general question of increasing the life of wooden ties need not be discussed here but it is a matter of great importance and growing interest.

Mr. C. W. Stuart, 31 Broad Street, New York, is the owner of the patent for this plate in the United States and will give any further information desired concerning it."

Counsel for defendants also offer in evidence the article on page 221 of the issue of April 5, 1889, of the Railroad Gazette,
675 including the cuts in the article, the same is marked "Defendants' Exhibit FF, Kate S. Holmes, Notary Public."

Mr. Brown: Same objections.

Mr. Reed: "The Elastic Tie Plate, 19 Great George Street, London, S. W., March 23, 1889. To the Editor of the Railroad Gazette: Seeing in your issue of March 8 an illustration of a base tie plate supposed to be taken from my paper on 'The use of Heavier Rails' lately presented to the Institution of Civil Engineers here, I beg to say that it is an entire mistake as can be seen by any one on reference to the drawing in the paper, and also to the volume of the Minutes and Proceedings of the same Institution just published, and I hope you will republish my design from these minutes, and allow space in your valuable columns for the following corrections. Your

readers would otherwise think that this is the base plate that I propose and have suggested for use on Swedish and other railways. This I deny and would not by any means have my name connected with such a design as the one you have illustrated, and of which a small lot is said to have been laid in 1883 on a private line in Sweden.

To tell the truth this base plate, as well as the stone sleeper, was offered to me for trial by the inventor in Sweden, a Mr. Schauman, in 1883, but I declined for obvious reasons. I need not here give my reasons for so doing, but I hope that my professional standing is too well known to your readers for them to think that I should be associated with such a scheme and in justice to the railways of Sweden for which I have been for the last twenty years and still am consulting and inspecting engineer, I should not like it to be supposed that they entertained such a proposal for such a supposition would seriously mislead your readers in America. (Immediately above the words 'I should be associated with such a scheme' appear cuts.)

Something of the same description is now largely made in England for South American railways, but there is no elasticity about it, which seems to be the subject of the patent in this design. I had it all under consideration while designing the proposed base plate published in my paper, but as for patents I take this opportunity to state that I never had any connection with patents of any description, as it would have interfered too much with my independence as a professional consulting engineer. Whenever I arrived at a conclusion from practical experience that anything good could be introduced to the benefit of producers and consumers of railway plant, I
676 published it openly for any one to adopt; thus I have no material interest in pressing my design for rail section or base plates, and this has been my principle all through my professional life, and this is the case with the base plate now under notice. In this way I have not the slightest reason to oppose the schemes of others, and will gladly see the best adopted; but I could not allow your readers to imagine that the ilustration in yours of March 8 is the base plate I proposed and published in my paper. Should this be adopted in America and prove a success, I should then have received credit for what does not belong to me had I not sent you this disclaimer. C. P. Sandberg (We reproduce the drawing of the tie plate proposed by Mr. Sandberg and regret that the one illustrated by us before should have been confounded with the design recommended by him. The promoter of the 'elastic tie plate' is in no way responsible for that error. The plate shown here is designed to weigh 10 lbs. and Mr. Sandberg recommends a surface of 7 in. by 10 to 15 in. He suggests rolling the plate of an inclination of 1 to 20 in the rail seat for those who wish to have the rail canted inward. Editor Railroad Gazette.)"

Counsel for defendants also offer in evidence the article entitled "The Cac Tie Protector Plate" and cuts illustrative of the same shown on page 613 of the issue of August 5, 1892, of the Railway Age and Northwestern Railroader and the same is marked "Defendants' Exhibit GG, Kate S. Holmes Notary Public."

Mr. Brown: Same objections.

Mr. Reed: The letter press is as follows: "The Cac Tie Protector Plate, shown in our engraving is formed of steel, rectangular, 8 in. long for rails with bases from 4 to 4½ in. and 9 in. long for rails with a base of over 4½ inches. It can be cut to any width to suit the requirements of roads.

On its upper surface there is a rib running directly across the face of the plate, for the flange of the rail to bear against (instead of bearing against the spike). This rib is so divided that the spike is brought directly against the rail and the whole head of the spike utilized for holding down the rail.

On the lower surface there are six elongated spurs or lugs. These lugs are driven into the tie, which firmly secures the plate so that it can not move in any direction with any movement of the rail, and acts just as six additional spikes on the outside of the rail to resist lateral strains. For the Cac Tie Protector Plate the following claims are made.

677 1. It prevents the tie from being cut because it can not oscillate or creep so that any movement of the rail is not communicated to the tie through the plate, but all friction and cutting by such movement of the rail is borne solely by the plate.

2. It keeps a true gauge because any lateral thrust or strain is against the rib or shoulder on the upper surface, and is directly met by the six lugs formed on the lower face of the plate. These lugs being each about an inch long, give a resistance of six inches of fibres against such a thrust; being three times as much as any brace now in use.

3. It prevents the spike from being cut, because the plate being removable no lateral friction can be brought against the spike, the shoulder or rib in combination with the lugs underneath preventing it. The spike has no duty to perform except to keep the rail down.

Particular attention has been given in designing the lugs. They are longer at the base than the point and run from one-quarter of an inch thick at the base to a fine cutting edge. It will thus be seen that they completely fill any cut they make and are expected to fit so tightly that no water can percolate down between them and the wood to form premature rot and decay in the center of the tie.

The Central Oil & Supply Company, 24 Whitehall Street, New York, who own and manufacture this plate, submit the following comparative statement showing the cost of maintaining track with and without tie protector plates." Statement omitted.

Adjourned to 2:30 P. M. of the same day.

March 4, 1910—2:30 o'clock p. m.

Met pursuant to adjournment.

Present as before.

Mr. Reed: Counsel for defendants offer in evidence the cut styled "Combined Tie Plate and Brace" and the paragraph in reference thereto on page 32 of the issue of the Railway Age and Northwestern

Railroader, dated January 13, 1893, marking the same "Defendants' Exhibit HH, Kate S. Holmes, Notary Public."

Mr. Brown: Same objections.

Mr. Reed: Said article reads as follows: "Combined rail brace and tie plate.

678 "Our engravings show a device which combines the functions of a rail brace and a tie plate in an effective manner. It is 12 in. long four inches wide and ½ in. thick and weighs about six pounds. The plate has rounded corners, beveled ends and a slightly concave bottom and carries a solid brace as shown. The upper surface of the plate presents on one side a shoulder as shown, for the reception of the base of the rail, which supplements the support against side thrusts [illegible] is afforded by the brace. The makers claim an especial p[illegible]e placing of the four spikes in the question of resistance. [illegible]ne of a good brace and of a good tie plate is already well known. This combination is especially addressed to track work on curves. In removing rails for repairs it is necessary to take out only one spike from each plate. This device is made of malleable or cast iron or can be stamped from steel plates. It is offered by D. F. Holman, 94 Dearborn Street, Chicago, who is well known through his track laying machines."

Also offers in evidence the article on page 384 of the issue of May 12, 1893, of the Railway Age and Northwestern Railroader, and asks that the same be marked "Defendants' Exhibit II, Kate S. Holmes, Notary Public."

Mr. Brown: Same objection.

Mr. Reed: The article is as follows:

"The Servis Combination Tie Plate.

The Q. & C. Company of Chicago, the manufacturers of the Servis tie plate, have brought out a new plate which is an improvement or, at least a development of the old device, to be known as the Servis combination tie plate. In addition to the longitudinal flanges on the under side, which are the feature of the old Servis plate, the new plate has also a longitudinal rib on the upper side, the shoulders of which abut on the edges of the rail flange, the object being to prevent lateral motion of the rail. With the Servis plate in its well known form the flanges embed themselves in the tie so as to make the tie and plate practically one piece. The rib on the top in the combination plate forms a recess or channel rail seat to prevent any lateral movement of the rail on the plate. Ordinary rail braces or shoulder stops, the manufacturers urge, only operate to prevent outward movement of the rail, and there is often to be found a play between rail and brace or shoulder stop of ⅛ inch and upwards. Track will some-

679 times show a fair gauge when at rest, and the rails spread outward to engage with the brace or stop under pressure of the wheels. The seat afforded by the surface rib on this plate is designed to prevent inward movement of the rail as well as outward. The manufacturers say: 'In watching the action of track under pressure, it will be observed, particularly on curves, that the rails are pushed outward in advance of the moving wheels, until the

flanges or web of the moving or spreading rail are brought to a stop against the braces or shoulder stops as the case may be. When relieved of the wheel pressure the rail springs back to be pressed out again by the wheels which follow.' It is to avoid such wear and tear as this that this plate is designed. The rail is held fixed in one position resisting all side thrust and lateral oscillatory movement under a moving train."

Also offer in evidence a paragraph headed "The Glendon Tie Plate" and the cut shown therein in Vol. 30 of the Railroad Gazette issued December 30, 1898, at page 934, and the same is marked "Defendants' Exhibit JJ, Kate S. Holmes, Notary Public."

Mr. Brown: Same objections.

Mr. Reed: Said article is as follows:

"The Glendon Tie Plate. Messrs. Dilworth, Porter & Co. of Pittsburg have lately brought out a new tie plate known as the Glendon longitudinal flange tie plate designed for use in soft wood ties. It has the essential points of the general type of longitudinal flange plate which has been successfully used for the last six or eight years. It will be observed that the side flanges are overlapped by the body of the plate, and it is believed that this will protect the wood from some of the bad effects of water getting in where the fibre is spread by the entrance of the flange. It will be seen further that the rail rests on a bearing surface which is immediately over the flange, and it is claimed that this plate is thirty per cent. stronger than any other tie plate of the same size and weight. The depressions between the bearing surfaces will tend to collect dirt and grit, thus reducing the friction and wear on the plate, and it is claimed that these depressions are so shaped that the grit will be readily displaced by wind. Although the outer flange is overlapped by the body of the plate, yet the top of the plate is so shaped that the bearing surface does not project materially beyond the flange, thus minimizing the rocking. Finally, the makers claim great adhesion and lateral resistance, and also that the flanges are proportioned so as to compress the fibre without crushing it. These plates will be
680 supplied 6 in., 5 in. and 4½ in. wide and from 1/16 to ⅜ in. thick and of any strength desired. Special plates will be furnished also for switch leads, frogs, crossings, etc."

Mr. Brown: Complainant's counsel repeats the objections entered on the record after Q. 17 and after the offer of exhibits, and objects generally to the entire deposition and said exhibits, as incompetent, irrelevant and immaterial; as relating to matters not set up in the answer and of which no notice has heretofore been given to the complainant by the defendant; also because indefinite and incompetent as to the date when any of the devices referred to were actually manufactured or placed upon the market, if at all, and the notice of the motion to strike out is hereby repeated. Cross-examination waived.

Deposition closed.

Whereupon an adjournment was taken to Monday, March 7, 1910, at 2:30 o'clock P. M., at the office of Mr. F. F. Reed.

March 7, 1910—2 o'clock p. m.

Met pursuant to adjournment.
Present Mr. Brown and Mr. Reed.

JULIUS KRUTTSCHNITT, a witness called on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation?

A. My name is Julius Kruttschnitt, I live in Chicago, I am director of maintenance and operation of the Southern and Union Pacific System.

Q. 2. In 1904 what connection, if any, had you with these systems of railroad?

A. My appointment dated April 1, 1904, and for the rest of the year my position was the same as it is now.

Q. 3. Do you recall a meeting of the engineers and maintenance of way officials of the system, if so, state briefly when and where it was and who attended?

A. I called a meeting of the engineers in charge of maintenance, in September, 1904, to consider questions relating to standard practice for all of the roads over which I had jurisdiction. The
681 meeting was attended by Mr. Wallace, Engineer of Maintenance of Way of the Southern Pacific, by his assistant, Mr. Isaacs, by Mr. Cushing, Engineer of Maintenance of Way of the lines east of El Paso, Texas, by Mr. Kennedy, of the Oregon Railroad & Navigation Company; by Mr. Ashton, of the Oregon Short Line and by Mr. Berry, of the Union Pacific, and I think the Chicago & Alton had a representative present, as that line attended our meetings though I had no jurisdiction over it.

Q. 4. At that time what tie plate was in use on the systems as standards, if you recall?

A. As to the Southern Pacific, we were using a number of different tie plates. We were using what is known as the Q. & W., the Wolhaupter, the Glendon, the Servis, the Diamond State, the Hart; and the Southern Pacific lines had in use a great many of the old flat bottom plates that were put on before this drawing was gotten up.

Q. 5. Do the drawings on Defendants' Exhibit X, referred to in the deposition of John D. Isaacs illustrate the forms of tie plates to which you have referred?

A. They do.

Q. 6. Please state what transpired at this meeting with reference to the adoption of any form of tie plate for the systems as standard?

A. Amongst the questions brought up for discussion was that of a standard tie plate; my recollection is that the Southern Pacific form of plate that had been in use some ten or twelve years, was unanimously recommended. But there had been a great many breakages of this plate and in submitting a design to the meeting a drawing was submitted showing the plate very much thicker and very much heavier. This led to the criticism that the cost of the plate would be very much increased, and the suggestion was made whether it

couldn't be lightened by taking out some of the metal under the base of the rail where it was doing no particular good. A suggestion and I think a drawing was submitted after the meeting by Mr. Wallace, who was charged with the preparation of the drawings, showing lozenge shaped depressions under the rail. This was voted down on account of the alleged difficulties in rolling, and the suggestion was made that two channels parallel to the center line of the rail could be rolled that would lighten the plate without weakening it, and this design was adopted, as is shown in Defendants' Exhibit V, it is marked "Drawing CS 23*a*" and that is the plate that
682 is now being used by the Southern and Union Pacific Systems.

Q. 7. Does the drawing Exhibit U, show the plate that was suggested at first, without the lozenge or the grooved construction?

A. Yes, Exhibit U is the old, flat bottom, Southern Pacific plate, the same that had been used for some twelve years previously, but of a lighter and weaker design.

Q. 8. That is, you mean that the plate actually used was lighter than the one shown in the Exhibit?

A. Yes. The old plate averaged about 20/64 of an inch thick, and the new one was 28/64.

Q. 9. Do you recall by whom the suggestion, either as to the lozenge depressions or the channel or grooved depressions was made?

A. My recollection is pretty clear that I objected to the plate shown in Exhibit U, on account of its weight and cost. I was presiding officer of the meeting, and I think I asked for suggestions how the plate could be lightened. Now who was responsible for the suggestion I can't say now, but I am quite certain the suggestion for the lozenge style was submitted in the room and drawings were made after the meeting broke up. I have always been under the impression that the suggestion about the channels was made by me, conveyed to Mr. Wallace, and by him put on the drawing.

Q. 10. So far as you know did any representative of the Railroad Supply Company have anything to do with either of these suggestions?

A. They had absolutely nothing to do with it. We were buying from them plates shown on that large sheet and it was on account of more or less dissatisfaction with the service of these plates that we were looking around for something else. (Witness refers to Exhibit X.)

Q. 11. Have you any interest in this suit?

A. None whatever.

Q. 12. And were you subpœnaed to appear this afternoon?

A. I was.

Mr. Brown: The deposition of this witness is objected to as irrelevant and immaterial to any issue joined in the case, and notice is given that at the proper time motion will be made to strike the deposition from the files.

Without waiving said objection, but insisting upon the same, complainant's counsel cross examines.

683 Cross-examination by Mr. Brown:

X Q. 13. Whom do you understand to be the parties to this litigation in which you are testifying?

A. My impression is it is a suit against the Santa Fe road.

Mr. Brown: Cross-examination ended.

JULIUS KRUTTSCHNITT.

Whereupon an adjournment was taken to March 10, 1910, at 10:30 o'clock A. M.

March 10, 1910—10:30 o'clock a. m.

Met pursuant to adjournment.
Present as before.

W. A. LINN, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.

A. W. A. Linn, Chicago; Assistant Purchasing Agent, Chicago, Milwaukee & St. Paul Railway.

Q. 2. How long have you occupied that position?

A. Oh, twenty years.

Q. 3. Do you know the kind of tie plates, and from whom, the Chicago, Milwaukee & St. Paul Railroad Company has been purchasing tie plates for, say, the last five years?

A. Yes.

Q. 4. Please state from what concern, and about how long you have been purchasing your present plates?

A. From the Beaver Dam Malleable Iron Company, during the past five years.

Q. 5. And what kind of plates have been supplied? Can you describe them?

A. They are made of malleable iron, with shoulders on the top, otherwise flat on the top, and with four flanges, generally speaking, on the lower side of the plate. The two center flanges being broken.

Q. 6. Please look at the tie plates marked Defendants' Exhibits O^{21}, O^{22} and O^{23}, in this case, and state whether or not those are specimens of the plates so purchased from the Beaver Dam
684 Malleable Iron Company and used on the St. Paul road?

A. Those are similar to our standard plates, just the same, as near as I can identify them.

Q. 7. And in what quantities if you know have these plates been purchased and used by the St. Paul road during the last five years?

A. The quantities are very large; I don't know exactly, but they run into the millions, yearly.

Q. 8. Could you tell us about how many of these plates have been purchased and used during the last year?

A. During the last year I should estimate two million.

Q. 9. And are these plates at the present time standard on the St. Paul road?

A. They are.

Q. 10. Does the St. Paul road use tie plates on tangents, as well as curves?

A. Yes.

Q. 11. Have you any interest in this suit?

A. None whatever.

Q. 12. And I believe you were subpœnaed?

A. Yes.

Mr. Brown: The deposition of this witness is objected to as incompetent, and as irrelevant and immaterial to any issue in the case, and notice is given that a motion will be made at the proper time, to strike the deposition from the files. Cross-examination waived

W. A. LINN.

CARTER BLATCHFORD, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.

A. Carter Blatchford; Second Vice President, Spencer Otis Company; residence, Lexington Hotel, Chicago.

Q. 2. How long have you been connected with Spencer Otis Company?

A. About ten years.

Q. 3. And what have been your duties during that time, in a general way?

685 A. The first seven years I was with them I was in the office, the latter part has been devoted to sales.

Q. 4. What is the business of Spencer Otis Company?

A. Railway supplies.

Q. 5. Have they anything to do with a railroad appliance known as a tie plate?

A. They have.

Q. 6. About how long, to your knowledge, has Spencer Otis Company dealt in tie plates?

A. Since 1902.

Q. 7. Please state whether at the present time the Spencer Otis Company is manufacturing and selling tie plates?

A. Yes, sir.

Q. 8. For about how long or since that date has Spencer Otis Company been actually manufacturing tie plates?

A. Since November, 1907.

Q. 9. Where is their mill or factory of tie plates located?

A. Portsmouth, Ohio.

Q. 10. Prior to the time that Spencer Otis Company began the manufacture of tie plates, in what way did they deal in tie plates, if any?

A. We were the western sales representatives of the Hart Steel Company.

Q. 11. And also of the Elyria Iron & Steel Company?

A. Yes.

Q. 12. During the period that Spencer Otis Company were the western representatives of the Hart Steel Company and the Elyria Steel & Iron Company, what kind of tie plates were sold by it?

A. Numerous rolled steel designs; one design known as the Hart plate, another known as the McKee plate.

Q. 13. And what is the fact as to whether Spencer Otis & Company, during this period of representation of the Hart Steel Company, selling and supplying to different roads tie plates of the kind you have mentioned; whether they did supply roads during that period with the McKee and Hart plate?

A. Yes, and other designs.

Q. 14. Give us a list or enumeration of the railroads to whom Spencer Otis & Company, either as the representative of the Hart Steel Company or as a manufacturer, has sold and supplied tie plates during this period from 1902?

A. Yes, the Adirondack & St. Lawrence Railroad; Atchison, Topeka & Santa Fe; Atlantic Coast Line; Arizona & New Mex-
686 ico; Ann Arbor Railroad; Boston Elevated Railroad; Baltimore & Ohio; Bay Point & Clayton; Chicago Great Western; Coney Island & Brooklyn; Chicago & Oak Park Elevated; Calumet & Hecla Mining Company; Chicago, Rock Island & Pacific; Chicago & Northwestern; Chicago & Alton; Colorado & Southern; Chicago & Eastern Illinois; Chicago, Burlington & Quincy; Chicago, Milwaukee & St. Paul; Chicago, St. Paul, Minneapolis & Omaha; California & Northwestern; Colorado Midland; Detroit, Toledo & Ironton; Denver & Rio Grande; Evansville & Terre Haute; Gulf, Colorado & Santa Fe; Grand Rapids & Indiana; Interboro Rapid Transit Company; Illinois Central; Kansas City, Mexico & Orient; Long Island Railroad; Lake Superior & Ishpeming; Lake Erie & Western; Minneapolis & St. Louis; Metropolitan West Side Elevated; Mill Valley & Mt. Tamalpais; New York, Ontario & Western; Norfolk & Western; North Side Street Railroad; Oregon Short Line; Oglesby & Granville; Superior & Southeastern; San Pedro, Los Angeles & Salt Lake; San Jose & Santa Clara; Terminal Railroad Association of St. Louis; Tidewater Railway; Utah Copper Company; United Railroads of San Francisco; Virginian Railway; Western Maryland; Western Pacific; Yazoo & Mississippi Valley; Yosemite Valley.

Q. 15. And during the period that Spencer Otis Company was the western representative of the Hart Steel Company, it sold and supplied the kinds of plates that were rolled by the Elyria Iron & Steel Company, I understand?

A. Yes.

Q. 16. What kind of tie plates has the Spencer Otis Company manufactured and sold since it began the manufacture of tie plates?

A. The kinds shown in this catalogue. (Handing counsel pamphlet.)

Mr. Reed: Said catalogue and the plates or cuts showing tie plates therein, are offered in evidence by defendants' counsel, as Defendants' Exhibit KK.

Q. 17. Do I understand that the Spencer Otis Company is now actually manufacturing and supplying to railroads the forms of tie plates shown in this catalogue, Exhibit KK?

A. Yes.

Q. 18. Could you give us a list or enumeration of the railroads that the Spencer Otis Company has supplied with tie plates since it began the manufacture?

A. Yes.

Q. 19. Please do so.

687 A. Adirondack & St. Lawrence; Atchison, Topeka & Santa Fe; Atlantic Coast Line; Arizona & New Mexico; Ann Arbor; Boston Elevated; Baltimore & Ohio; Bay Point & Clayton; Coney Island & Brooklyn; Chicago & Oak Park Elevated; Calumet & Hecla; Chicago, Rock Island & Pacific; Detroit, Toledo & Ironton; Gulf, Colorado & Santa Fe; Interboro Rapid Transit; Illinois Central; Kansas City, Mexico & Orient; Long Island Railroad; Lake Superior & Ishpeming; Metropolitan West Side Elevated; New York, Ontario & Western; Norfolk & Western; North Side Street Railway; Oglesby & Granville; Terminal Railroad Association of St. Louis; Tidewater Railway; Utah Copper Company; Virginian Railway; Western Maryland Railway; Yazoo & Mississippi Valley; Yosemite Valley.

Q. 20. Please state if you can the quantities in which Spencer Otis Company supplied the various railroads enumerated with tie plates during the period of its representation as western agent of the Hart Steel Company?

A. I can't answer exactly, but the quantities were largely going up into the thousands.

Q. 21. Do you mean "by the thousands" in each instance?

A. Yes.

Q. 22. And what can you say as to the quantities with which Spencer Otis Company has supplied the railroads with tie plates since it began the actual manufacture in 1907?

A. About the same.

Q. 23. That is, the quantities were large?

A. Yes, sir.

Q. 24. I understand that the Spencer Otis Company is still in active manufacture and sale of tie plates?

A. Yes, sir.

Q. 25. And that it is now actually manufacturing and supplying to railroads tie plates of the forms shown in Defendants' Exhibit KK, the catalogue which you have produced?

A. Yes, sir.

Q. 26. And could you tell us about what the annual output of tie plates of the Spencer Otis Company was for the last year?

A. No, not exactly, I am not in that part of it. We figure we can get out about ten thousand tons per annum.

Q. 27. And your mill has been busy during the last year?
A. Yes.
Q. 28. And running to practically its ordinary capacity?
A. Yes, sir.
688 Q. 29. You have no interest in this case?
A. None whatever.
Q. 30. And you were subpœnaed?
A. Yes.

Cross-examination by Mr. Brown:

X Q. 31. How old are you, Mr. Blatchford?
A. Twenty-nine years of age.
X Q. 32. During the period prior to November, 1907, what style or type of tie plate did the Spencer Otis Company sell?
A. Those manufactured by the Elyria Iron & Steel Company.
X Q. 33. Yes, but what style or type.
A. Flat bottom plates, and four flanged plates.
X Q. 34. Are either of these two styles of plates you have just mentioned shown in Defendants' Exhibit KK, the catalogue?
A. Not exactly the same ones, no.
X Q. 35. Please describe more in detail the flat bottom plates that you referred to in your answer to X Q. 33.
A. A flat bottom plate with a shoulder on top.
X Q. 36. And aside from the shoulder on the top of the plate the top was flat, was it not?
A. It had corrugations running diagonally.
X Q. 37. Was the top of the flat bottom plate like the Economy plate No. 3 of your catalogue?
A. Something similar.
X Q. 38. Please describe the four flanged plate that you referred to?
A. It was a plate known as the Hart tie plate; it was a cambered plate with slight corrugations running from the center to the side of the plate in a diagonal direction.
X Q. 39. These corrugations were on the top surface, were they?
A. Yes, sir.
X Q. 40. Did it have a shoulder on top also?
A. Not the original plate, no.
X Q. 41. And the four flanges on the bottom, how did they run and were they all the same depth?
A. They ran longitudinally of the plate, the two outer flanges being slightly longer than those in the middle.
X Q. 42. Was this four flanged plate anything like the Economy plate shown in your catalogue as No. 4 or No. 5?
689 A. Similar except for the top surface.
X Q. 43. And those two types or styles of plate, the flat bottom plate and the four flanged plate that you have just described, were the only tie plates that Spencer Otis & Company sold during the period between 1902 and November, 1907, are they?
A. No, sir.

X Q. 44. Those are the only two types of plates that Spencer Otis & Company sold during that period for the Hart Steel Company, were they?

A. No, sir.

X Q. 45. What other styles of plates did Spencer Otis Company sell during that period?

A. The McKee plate, which is a four flanged plate with a shoulder on. If my recollection serves me right this is all we sold.

X Q. 46. Then the McKee plate, the four flanged plate and the flat bottom plate are the only styles of plate, so far as you know, that were sold by the Spencer Otis Company between 1902 and November, 1907, is that correct?

A. As far as I know, yes, sir.

X Q. 47. Have you any idea how many of those plates were sold during that period?

A. Nothing definite, except that they were in great quantities.

X Q. 48. What do you mean by "great quantities"?

A. Thousands and hundreds of thousands.

X Q. 49. Well, suppose you make a guess and give us the outside figure.

A. It would be impossible to do it and come within any limit.

X Q. 50. Well, do you think you sold as many as a million of those tie plates prior to 1907?

A. Easy.

X Q. 51. Did you sell as many as five million?

A. I should imagine so.

X Q. 52. Do you think you sold as many as ten million?

A. I couldn't say as to that.

X Q. 53. What is your best recollection, do you think you sold more than five and less than ten million of those tie plates?

A. I couldn't figure it out, I couldn't give you any idea at all.

X Q. 54. Prior to 1907 did Spencer Otis & Company sell either of these three kinds of tie plates that you have just men-
690 tioned to all of the roads or concerns mentioned in the list that you have given in answer to question 14?

A. I think so, yes.

X Q. 55. Why do you say that Spencer Otis Company began manufacturing tie plates in November, 1907, how do you know that fact?

A. I don't know exactly; that was about the time our mill was started, just how soon after that they commenced making plates, I am unable to say.

X Q. 56. Do you know just when Spencer Otis Company rolled the first tie plate in the Portsmouth mill?

A. I cannot give the exact date.

X Q. 57. Do you know when the plates that were rolled in the Portsmouth mill were first shipped by Spencer Otis Company?

A. No, sir.

X Q. 58. Do you know to whom the first shipment of tie plates rolled at the Portsmouth mill was made?

A. I am not sure, but I think the Baltimore & Ohio.

X Q. 59. Do you remember who made the first sale?

A. No.

X Q. 60. Do you remember the quantity of tie plates first shipped?

A. No.

X Q. 61. Do you remember or know the price that was paid for them, or at which they were sold?

A. No, sir, I do not.

X Q. 62. Just how long have you been connected with the sales department of Spencer Otis Company?

A. Three or four years.

X Q. 63. And how long have you been in your present position as Second Vice President?

A. Since the first of the year.

X Q. 64. You mean you have been Second Vice President since January first, 1910?

A. Yes, sir.

X Q. 65. And during this time that you have been connected with the sales department "three or four years," just what have been your duties?

A. Principally selling.

X Q. 66. Selling tie plates?

A. Yes, and other material.

X Q. 67. And have you personally sold tie plates to any of the roads named in your list in answer to question 14?

691 A. Yes.

X Q. 68. What plates have you sold?

A. During what period do you mean?

X Q. 69. Since you have been in the sales department of Spencer Otis Company? I mean since November, 1907?

A. I can't answer that.

X Q. 70. Look at the Spencer Otis Catalogue, KK, and designate which tie plates there shown you have sold, of any kind?

A. Economy No. 1, No. 2, No. 4, No. 6, No. 9R; that is all I can recollect now.

X Q. 71. And prior to November, 1907, did you personally sell either of the three tie plates previously mentioned? That is, the flat bottom plate, the four flanged plate or the McKee plate?

A. Yes, sir.

X Q. 72. Now these eight different styles of tie plate that you have personally sold at different times, which one style did you sell the most of?

A. I am unable to answer that without referring to the records.

X Q. 73. I do not mean which one of the eight styles did you sell the most of in a single order, but I mean generally, which one of the eight?

A. I should say plate No. 1.

X Q. 74. That is, the Economy plate No. 1, in this Exhibit Catalogue KK?

A. Yes, sir.

X Q. 75. How many of those plates have you sold about?

A. I am unable to answer that without referring to records.

X Q. 76. Haven't you any idea?

A. No, sir.

X Q. 77. Do you think you sold a million of them?

A. Not since we started our mill, no. Personally, you mean?

X Q. 78. What is the average selling price of those Economy tie plates No. 1?

A. I am unable to answer that.

X Q. 79. Why?

A. The market varies so much.

X Q. 80. Well, give us some idea of the price at which these plates are sold?

A. Thirty-eight or forty dollars a ton.

X Q. 81. Do you recall any sales of Economy tie plates No.
692 1, that you have personally sold at thirty-eight to forty dollars a ton, any single instance?

A. Yes, sir.

X Q. 82. When and to whom was such sale made?

Mr. Reed: That is objected to, as not cross-examination or material, and an effort to pry into the affairs of Spencer Otis & Company without the evidence in any way bearing on the case.

Mr. Brown: Complainant's counsel has no desire to learn anything about Spencer Otis & Company's business other than the information which he now possesses, but he insists upon an answer to this question for the reason that it is proper as tending to show the credibility of the witness whose cross-examination shows that he is antagonistic and unwilling.

Question repeated.

Mr. Reed: Defendant's counsel objects to such characterization of the testimony of the witness, he not having exhibited the slightest reluctance and having answered all the questions to the best of his ability, promptly and frankly.

Mr. Brown: Question repeated.

Mr. Reed: Counsel for defendants advises the witness that in the judgment of counsel he is not under any obligation to disclose any detail which would involve a disclosure of the affairs of Spencer Otis & Company, to its detriment, and he can govern himself accordingly.

A. I don't think it is right that I should answer this.

X Q. 83. Why?

A. I don't believe my principals would want me to.

X Q. 84. Do you know of any reason why the disclosure to this Court of the person or concern to whom the tie plates were sold by you personally at the price you have named, $38 to $40 a ton, would be detrimental to the interests of Spencer Otis Company?

Mr. Reed: Counsel for defendants object to this cross-examination of this character, and specifically to this question, on the ground that it is perfectly apparent that a disclosure of this kind made in the presence of a rival concern might very well and very easily embarrass the affairs of Spencer Otis & Company; the prices and de-

tails of sales cut absolutely no figure in this case, and the witness is at perfect liberty to protect his employers and his relations with them by declining to give anything which in his judgment would be detrimental to their interests.

693 Mr. Brown: Compainant's counsel protests against the instruction of the witness by defendant's counsel, under the guise of an objection, and the question is repeated.

A. I don't care to answer anything about this unless compelled.

X Q. 85. Are you quite certain that you actually made a sale of such tie plates at $38 or $40 a ton?

A. Yes, sir.

X Q. 86. Do you happen to know how many tie plates of all kinds, or about how many, were rolled at the Portsmouth mill by Spencer Otis Company during the first six months of its operation?

A. No, sir.

X Q. 87. Or how many were so rolled during the first year?

A. No, sir.

X Q. 88. Can you tell us anything about the weight of the tie plates that you personally have sold?

A. Not to my recollection now.

X Q. 89. Can't you tell us about what they weighed?

A. I should judge they run between three and a half to seven pounds, maybe heavier.

X Q. 90. Did you ever personally weigh a tie plate

A. Yes, sir.

X Q. 91. What practical experience have you had with the manufacture of tie plates?

A. None.

X Q. 92. What practical experience have you had, if any, with the installation and use of the tie plates?

A. Only from slight observation.

X Q. 93. Can you tell us anything definitely as to the order in point of time when the several tie plates shown in the Spencer Otis Catalogue, Defendants' Exhibit KK, were first rolled by Spencer Otis Company?

A. Not without looking it up, no.

X Q. 94. Which design of plate, shown in the Spencer Otis Catalogue, do you remember first selling.

A. If my recollection serves me right, it was the No. 1.

X Q. 95. Do you remember any sales which you personally made of the style of plate shown in this Spencer Otis Catalogue designated as Economy No. 12?

A. No, sir.

X Q. 96. When was this style of plate first rolled by Spencer Otis Company, if you know?

A. I don't know, I can't answer that.

694 X Q. 97. This catalogue, Exhibit KK, is the current catalogue of the company, is it not?

A. Yes, sir.

X Q. 98. Were there other catalogues of Spencer Otis Company prior to this one?

A. I believe so.

X Q. 99. Was this current issue, Exhibit KK catalogue the first catalogue of Spencer Otis Company that illustrated this Economy tie plate No. 12?

A. I believe that is a new sheet, possibly six months old, maybe longer.

X Q. 100. I notice this catalogue illustration of Economy tie plate No. 12 has upon it the words and figures "Patented 9-7-09"; to what do these words and figures refer?

A. That the plate is patented.

X Q. 101. Do you know to whom?

A. I do not.

X Q. 102. Is this plate illustrated in the catalogue as Economy No. 12, known by any other designation or name than that shown on the catalogue?

A. No, sir.

X Q. 103. Did you ever hear it called the De Remer plate?

A. No, sir.

X Q. 104. Did you ever hear it mentioned as the Santa Fe plate?

A. I heard it mentioned as the plate the Santa Fe were using.

X Q. 105. And this sheet of the catalogue illustrating Economy tie plate No. 12, you think is a new sheet possibly six months old or thereabouts?

A. Maybe more.

X Q. 106. It is not over a year old, is it?

A. I can't give the exact date.

X Q. 107. And was this style of plate, Economy No. 12, first rolled by Spencer Otis & Company before or after it was illustrated in the catalogue?

A. I couldn't say.

X Q. 108. Did you personally make any sales of this type of plate, Economy No. 12?

A. No.

X Q. 109. Other than sales to the Santa Fe System has Spencer Otis Company sold any of Economy plate No. 12 to any railroad?

A. I believe so, but I couldn't say positively.

695 X Q. 110. Please look at the left hand figure of the plan view and sectional elevation on the blue print drawing that has been introduced in evidence by the defendants in this case as Exhibit Q, and state whether or not those figures represent the same, or substantially the same plate as is illustrated in the Spencer Otis catalogue and designated Economy No. 12?

A. Yes, sir, I think it is.

X Q. 111. How many tie plates of the design referred to as Economy No. 12, has Spencer Otis Company rolled, so far as you know?

A. I couldn't say.

X Q. 112. How many tie plates of that design have they sold to the Santa Fe road?

A. I couldn't say.

X Q. 113. Well, you know of one lot of ten thousand tons, do you not?

A. I never heard it mentioned in that number of tons; we have had a few orders. As far as the tonnage is concerned, I never figured it out.

Cross-examination closed.

CARTER BLATCHFORD.

March 10, 1910—2.30 o'clock p. m.

E. J. STEINBECK, a witness called on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.

A. E. J. Steinbeck; assistant engineer employed by the Illinois Central Railroad Company; residence, Chicago.

Q. 2. How long have you occupied that position?

A. As assistant engineer, ten years. In the employment of the company twenty-seven years.

Q. 3. Have you had, as an employe of the Illinois Central Railroad Company, anything to do with tie plates, if so, state in a general way.

A. I have, and have had occasion to use and observe the use of tie plates more or less during the period of time when I was Supervisor, for two years and Roadmaster for four years.

696 Q. 4. And since that time does your office as Assistant Engineer give you opportunities for knowing the plates used by the road?

A. Yes.

Q. 5. About when did the Illinois Central Railroad Company commence the use of the plates?

A. To the best of my recollection, somewhere about the year 1895.

Q. 6. And what form or style of tie plate was then used by the Illinois Central?

A. The Servis tie plate was the first one used.

Q. 7. Please describe it.

A. The Servis tie plate has a flat top and provided with flanges running longitudinally with the tie.

Q. 8. Did it have a shoulder?

A. It had no shoulder.

Q. 9. About how long did the Illinois Central use that kind of tie plate, the Servis type?

A. They use- the Servis more or less for six or seven years.

Q. 10. What other kinds of tie plates if any did the Illinois Central adopt and use?

A. We used various forms, including the Servis; used some of the Goldie, the Wolhaupter and a malleable tie plate made by the Beaver Dam people; also the Sellers.

Q. 11. Please describe the Goldie tie plates.

A. The Goldie tie plates used by our company had a flat top, no shoulder and claws on the bottom projecting into the tie.

Q. 12. Were the tie engaging flanges parallel to the grain of the wood?

A. Crosswise.

Q. 13. Describe the Wolhaupter.

A. The Wolhaupter plate was provided with a corrugated upper surface and with flanges on the under side running longitudinally with the grain of the tie.

Q. 14. And the top corrugations in the same direction as the lower flanges?

A. Yes, sir.

Q. 15. The Sellers tie plate used by you was of what form?

A. The Sellers plate was provided with a shoulder and slight corrugations on the bottom.

Q. 16. Aside from the shoulder the top was flat?

A. Yes, sir.

697 Q. 17. And the malleable plates that were used, can you describe those?

A. I can't describe those. I have a record in the office that we used a few of those, but I don't remember to have seen them.

Q. 18. Up to what period did you use these last forms of tie plate on the Illinois Central, altogether?

A. Up to about 1907.

Q. 19. And from 1907 to date, what tie plates has the Illinois Central used?

A. We purchased very few tie plates in 1908, and in 1909 adopted as our standard the Economy tie plate purchased from the Spencer Otis Company, and the Sellers tie plate furnished by the Sellers Manufacturing Company.

Q. 20. And the Sellers and Economy plates are now standard on the Illinois Central, I understand?

A. Yes, sir.

Q. 21. How extensively have you purchased either of them in the last year or two?

A. In the year 1909 we purchased a quarter of a million of the Sellers plates, and a half a million of the Economy plate.

Q. 22. Please describe the Economy plate that is now standard?

A. The plate has a corrugated top, is provided with a shoulder, and has four flanges on the bottom running longitudinally or parallel with the grain of the tie; the two outer flanges are one-half inch deep, the two intermediate flanges five-sixteenths.

Q. 23. Please describe the Sellers plate that is now standard?

A. The Sellers plate has a smooth top, is provided with a shoulder, and has slight corrugations on the bottom consisting of small flanges running diagonally in both directions.

Q. 24. Have you ever heard that Sellers plate referred — by any specific name, such as the Waffle plate?

A. I never happened to have heard them called that.

Q. 25. Look at Exhibit N of the defendants in this case and

state whether that is a specimen of the Sellers plate used by your road?

A. Practically the same thing.

Q. 26. I presume that you have, in a general way, noticed the different forms of tie plates that have been on the market and used by different roads for some years?

Q. 27. Look at Exhibits O, O^1, O^3, O^{12} and O^{13}, aluminum
698 models; state whether you ever saw a tie plate like any one of those on the market or in use; and when I say "like" I mean practically identical.

A. I have never seen any of them in use by the Illinois Central, or any other road, so far as I have noticed.

Q. 28. Do you recall what if any reason there was for the abandonment of the Wolhaupter and Servis tie plates and the limitation of the standards to the Sellers and Economy plates on the Illinois Central?

A. The Servis was not provided with a shoulder, and the Wolhaupter also lacked a shoulder in addition to which our people considered the flanges on the Wolhaupter too deep.

Q. 29. And for what result or reason did they consider the flanges on the Wolhaupter too deep?

A. Destructive to the tie.

Q. 30. You have no interest in this suit, I take it?

A. No, sir.

Q. 31. And I believe was subpœnaed to give your deposition?

A. I was.

Cross-examination by Mr. Brown:

X Q. 32. What, if anything, did you personally have to do with the discarding of the Wolhaupter type of tie plate.

A. Nothing, personally.

X Q. 33. And who did?

A. The Chief Engineer of Maintenance of Way.

X Q. 34. And what was his name, please?

A. H. R. Safford.

X Q. 35. It is a fact, is it not, that the Economy plate which you have adopted as a standard has four flanges, as have the Wolhaupter plates?

A. Yes, sir.

X Q. 36. Do you know whether or not prior to the abandonment of the Wolhaupter plate by your road and the adoption of the Economy plate that samples of Wolhaupter plates were offered to your company having bottom flanges not so deep as these that you had previously been using?

A. I can not say from my personal knowledge.

X Q. 37. And you do not know whether such Wolhaupter plates also had a shoulder?

A. I do not know. I only remember that our chief en-
699 gineer of maintenance of way had a large number of plates in his office from which he selected those he considered the best.

X Q. 38. And you know nothing about the question of price at

which the respective plates under consideration by him were offered to the road, do you?

A. No, sir.

X Q. 39. It is a fact, is it not, that the Illinois Central road turns in to the Sellers company scrap in partial payment of the Sellers plate which it purchases, and that the Sellers plates are considered by railroad people familiar with tie plates "a scrap conversion" plate or proposition?

A. I am not aware that that is the fact.

X Q. 40. You can not state from your own knowledge that it is not a fact, can you?

A. No, sir. Never heard them so called, however.

X Q. 41. And you know nothing about the Illinois Central turning in to the Sellers Company scrap from which tie plates are made, do you?

A. No. I do not know what disposition our material department makes of the scrap.

X Q. 42. Are you quite certain that the Goldie plates which you have mentioned had claws on their under surface instead of ribs or flanges?

A. Yes, sir.

X Q. 43. And equally certain that the Goldie plate was a flat top plate?

A. That is my recollection.

X Q. 44. You say you were subpœnaed in this case?

A. Yes, sir.

X Q. 45. Whom do you understand to be the parties in this case?

A. I know nothing about it except what I have been told by attorney Reed, who told me that the parties were those mentioned by the reporter at the beginning of the testimony.

X Q. 46. Who served the subpœna upon you?

A. Mr. Reed.

X Q. 47. You say that the Illinois Central commenced to use tie plates somewhere about the year 1895. Now tell us, if you please, in round numbers, to the best of your recollection, about how many tie plates of all kinds have been used by the Illinois Central from that time to this?

A. It is impossible to give anything like an accurate number without going through the record of the purchases, as we have no record in the general office showing the approximate num-
700 ber used, but the number will run pretty well up into the millions.

X Q. 48. During that period, from 1895 to date, what was the total number of miles of track of the Illinois Central system?

A. About four thousand miles.

X Q. 49. And is the entire trackage equipped with tie plates?

A. No, sir. We do not use tie plates on hard wood ties on straight track.

X Q. 50. On approximately about how many miles of trackage would you say tie plates have been used by the Illinois Central?

A. I wouldn't like to say.

E. J. STEINBECK.

JOSEPH R. HAYNES, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.
A. Joseph R. Haynes; I live at 7534 Harvard Avenue, Chicago; Assistant Purchasing Agent for the C., B. & Q. Railroad.
Q. 2. How long have you been Assistant Purchasing Agent for the Burlington road?
A. Five years.
Q. 3. How long prior to that were you in the employ of the road?
A. Since 1887,—23 years.
Q. 4. And in what department?
A. In the purchasing department.
Q. 5. Has the Burlington Railroad used tie plates in its track construction?
A. It has.
Q. 6. And have the tie plates used been supplied through the purchasing agent's department?
A. Yes, all bought through our office.
Q. 7. Have you personally known of the different kinds, quantities and dates of purchase of tie plates?
A. Yes.
701 Q. 8. Have you compiled from the records of the road a statement of the dates, concerns from whom purchased, names of plates and quantities purchased?
A. Yes. Well, the statement was compiled under my instructions, and I know that it is correct.
Q. 9. Is this the statement that was so compiled (handing witness paper)?
A. It is.
Q. 10. And is it correct?
A. It is correct.

Mr. Reed: Said statement offered in evidence and read into the record, and is as follows:

Year.	Firm.	Name of Plate.	Number Purchased.
1891	Dunham Mfg. Co.	Servis	225
	Q. & C. Co.	Servis	2356
	Shoulder Tie Plate Co.	Shoulder	206
1892	Shoulder Tie Plate Co.	Shoulder	1144
	Q. & C. Co.	Servis	600
1893	Q. & C. Co.	Servis	1700
	Dilworth Porter	Goldie	3560
1894	Q. and C. Co.	Servis	1736
	Dilworth Porter	Goldie	112360

1895	Q. and C. Co.	Servis	292
	Dilworth Porter	Goldie	14800
	Avery Stamping Co.	Fox	1200
1896	Q. and C. Co.	Servis	5516
	Dilworth Porter	Goldie	24836
	Johnson Co.	C. A. C.	10000
	Ry. Supply Co.	Wolhaupter	480
1897	Q. and C. Co.	Servis	24080
	"	C. A. C.	100
	Dilworth Porter	Goldie	30222
	Ry. Supply Co.	Wolhaupter	12460
1898	Q. and C. Co.	Servis	23800
	"	C. A. C.	72859
	Dilworth Porter	Goldie	37705
	Ry. Supply Co.	Wolhaupter	26068

702

1899	Q. and C. Co.	Servis	376
	"	Wolhaupter	180
	"	Q. and W.	7534
	Dilworth Porter	Goldie	367598
	"	Glendon	15500
	Ry. Supply Co.	Servis	3000
	"	Wolhaupter	77466
	"	Q. and W.	102644
1900	Dilworth Porter	Goldie	176471
	"	Glendon	240829
	National Mal. Cstgs. Co.	Malleable	1200
1901	Dilworth Porter	Goldie	516900
	"	Glendon	19170
	Ry. Supply Co.	Wolhaupter	372346
	National Mal. Cstgs. Co.	Malleable	424
1902	Dilworth Porter.	Goldie	796468
1903	Dilworth Porter	Goldie	1,002,542
1904	Dilworth Porter	Goldie	271790
	"	Glendon	100
1905	Dilworth Porter	Goldie	193958
	"	Glendon	305070
	Beaver Dam Mal. Iron Co.	Malleable	75980
	Sellers Mfg. Co.	Sellers Wrot.	32990
	Hart Steel Co.		143820

1906	Sellers Mfg. Co.	Sellers Wrot.	689772
	Beaver Dam M. I. Co.	Malleable	7839
	Dilworth Porter	Goldie	500
1907	Sellers Mfg. Co.	Sellers Wrot.	2,613,347
	Dilworth Porter	Goldie	36520
1908	Sellers Mfg. Co.	Sellers Wrot.	1,626,851
	Chgo. Mal. Cstgs. Co.	Malleable	462850
	Rockford M. I. Wks.	Malleable	90505
1909	Sellers Mfg. Co.	Sellers Wrot.	1230187
	Chgo. Mal. Cstgs. Co.	Malleable	193245
	Rockford M. I. Wks.	Malleable	10545
	Dilworth Porter	Goldie	7829
	Railroad Supply Co.	Steel	785460
	Interstate	Wrot.	1053625

703 Q. 11. Will you please describe the Servis plate that was used?

A. The original Servis plate was a flanged tie plate with a smooth top, the ribs ran longitudinally underneath the plate and engaged the tie. The plate had no shoulder.

Q. 12. Was there any change in the Servis plate at any time, if so, tell what change?

A. I can't answer that definitely but there were certain changes in dimension which increased the weight of the plate and some of the other features, I haven't them in mind.

Q. 13. Please describe the Goldie plate that was used?

A. The Goldie plates purchased were a shoulder plate and underneath the plate were four claws which engaged the wood of the ties.

Q. 14. The C. A. C. plate; please describe it if you can?

A. The C. A. C. plate was something similar to the Goldie, but the claws underneath were underneath the base of the rail in place of being at the ends of the plate. To my recollection it had a shoulder on top.

Q. 15. Please describe the Wolhaupter plate?

A. The Wolhaupter plate was what we called a ribbed tie plate with longitudinal ribs underneath the plate and my recollection is it had grooves on the top of the plate running in the same direction as the ribs underneath. It is my recollection that these Wolhaupter plates did not have shoulders.

Q. 16. Please describe the Glendon plate?

A. The Glendon plate has longitudinal ribs underneath, the two outside ribs being deeper than the intermediate ones. They had grooves on the top of the plate running in the same direction as the ribs underneath; the plates were without a shoulder.

Q. 17. The Q. & W. plate?

A. The Q. & W. plate was a modification of the Wolhaupter, or rather, an improvement on the Wolhaupter.

Q. 18. Please describe the Sellers plate?

A. We bought two types of Sellers plates. Those first obtained had diagonal ribs which engaged each other at about right angles on the underneath side of the plate; this did not cover all of the lower surface, but such of the lower surface as was underneath the base of the rail. The second type of plate was rolled somewhat differently and the entire underneath surface of the plate is covered with diagonal ribs.

704 Q. 19. Please describe the malleable plates as you have called them.

A. We bought about ten years ago, some malleable iron plates size four by ten; these plates had longitudinal ribs underneath which were not continuous; the top of the plate had a shoulder.

Q. 20. Please describe the malleable plates you bought of the Beaver Dam Malleable Iron Company in 1905 and 1906?

A. These plates were of the size about 5 by 7½ and in addition to having a shoulder on top they had longitudinal ribs underneath which were not continuous.

Q. 21. Mr. Haynes, you have kept sort of track of the different kinds of tie plates that have appeared on the market from time to time during this period, have you not?

A. I have to a certain extent.

Q. 22. Did you ever see on the market or in use a tie plate like the forms shown by Exhibits O, O^3, O^1, O^{12} and O^{13}, aluminum models in this case?

A. I have seen plates that embodied some of these features, but nothing exactly like any of these plates.

Cross-examination by Mr. Brown:

X Q. 23. In the list that you have given of tie plates used on the C. B. & Q. road, I notice some purchased in the years 1891 and 1892 from the Shoulder Tie Plate Company, and designated as the Shoulder plate; please describe those plates?

A. My only recollection of that plate is that it had a shoulder on top of the plate. I do not recollect the construction of the bottom of the plate.

X Q. 24. Then other than the top shoulder the top of the plate was flat, was it not?

A. My recollection is aside from the shoulder it was perfectly flat on top.

X Q. 25. And were all the plates which you have designated in this list as "Goldie." and purchased from Dilworth Porter & Company, constructed like the Goldie claw plate that you have described?

A. Yes, except there was a slight evolution in the construction of the claws from time to time; sometimes they had the claws underneath the plate at the very edge, and some of the other plates

705 we received the claws were moved back from the edge perhaps a quarter of an inch. Otherwise they were all alike.

X Q. 26. And were all the Goldie claw plates flat top and provided with a shoulder?

A. Yes.

X Q. 27. You have described the malleable plate purchased from

the Beaver Dam Company. Were the other plates which you have described as malleable and given in your list as purchased from other concerns, the same in construction as the Beaver Dam malleable plate?

A. Not absolutely. For instance, the malleable plates, we have bought some track and some bridge plates which vary in size. The different malleable iron companies vary their construction according to what they consider good foundry practice, and so long as the plates conformed to our general dimensions we did not object.

X Q. 28. Well, were they all flat top plates with a shoulder, and with non-continuous, longitudinal ribs underneath?

A. These plates were all flat top so far as that part of the plate which engages the base of the rail; the remainder of the top of the plate tapered somewhat which permitted the saving of metal. The malleable iron plates all had shoulders on top and had non-continuous longitudinal ribs underneath.

X Q. 28. I notice that in giving this list of plates, in the year 1905 you mention a quantity of plates purchased from the Hart Steel Company but have neglected to state the kind of plate; please describe that plate.

A. It is my recollection this was a plate with longitudinal ribs underneath and a shoulder on top. It was a flat top plate.

JOS. R. HAYNES.

Whereupon an adjournment was taken to March 11, 1910, at 10:45 o'clock A. M.

706 March 11, 1910—10:45 o'clock a. m.

Met pursuant to adjournment.
Present as before.

WILLIS MCKEE, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Cooke:

Q. 1. Please state your name, residence and occupation.

A. Willis McKee; residence, Elyria, Ohio; General Superintendent Elyria Iron & Steel Company.

Q. 2. Where is the Elyria Iron & Steel Company located?

A. Elyria, Ohio.

Q. 3. Is the Elyria Iron & Steel Company one of the parties to one of these suits?

A. It is.

Q. 4. What is the business of the Elyria Iron & Steel Company?

A. Elyria Iron & Steel Company manufactures tubing, agricultural shapes, tie plates and railroad spikes.

Q. 5. Have you entire charge of their plant as to the manufacturing end?

A. I have.

Q. 6. What is the relation of the Hart Steel Company to the Elyria Iron & Steel Company, and where is it located?

A. The Hart Steel Company is the selling organization of the Elyria Iron & Steel Company, insofar as it affects the material which they sell to railroads. The stock of the Hart Steel Company is all owned by the Elyria Iron & Steel Company. The Hart Steel Company is a New York corporation and maintains selling offices in New York, Elyria, Atlanta, San Francisco and Chicago.

Q. 7. How long have you been connected with the Elyria Iron & Steel Company?

A. Since May first, 1904.

Q. 8. How long have the Elyria Iron & Steel Company been engaged in the manufacture of tie plates?

A. About six years.

Q. 9. Have you been General Superintendent of the Elyria Iron & Steel Company all the time since you became connected with the concern, May 1, 1904?

707 A. I have.

Q. 10. Please state what technical training you have had and what mechanical experience you have been subjected to during your business career.

A. I was graduated from the Pennsylvania State College in 1892, in the civil engineering course; was employed by the Union Switch & Signal Company in 1892-1893 in erecting block signals on the New York Central. 1893-1894 I took some post graduate work in mechanical and electrical lines; became employed in the engineering department of the Carnegie Steel Company at Duquesne, Pa., as a draughtsman, in 1897, where I remained until 1899; from 1899 to 1901 I was at the Ohio works of the National Steel Company and Carnegie Steel Company at Youngstown, Ohio entering their employ as a draughtsman and becoming Chief Engineer before I left. I left their employ to become mechanical engineer of the Republic Iron & Steel Company, later becoming Chief Engineer of the same company. I remained in the employ of the Republic Iron & Steel Company until going with the Elyria Iron & Steel Company. I have also been engaged in some work as consulting engineer.

Q. 11. At the time you were with the Republic Iron & Steel Company as Chief Engineer, where were you located, and what was the extent of your jurisdiction of their plant?

A. My offices were at Youngstown, Ohio, but I had charge of all the engineering work at all the works belonging to the Republic Iron & Steel Company throughout the country.

Q. 12. In your professional or mechanical career have you been accustomed to designing machinery and articles, and if so to what extent?

A. I have designed special machinery the value of which ran into the millions of dollars, beside designing articles which, on account of being made in large quantities, would run into millions of dollars.

Q. 13. Have you had occasion to design tie plates of different kinds, and if so for whom and to what extent?

A. All engineering work for the Elyria Iron & Steel Company and for the Hart Steel Company is handled by me, and I have had

occasion to design a number of tie plates to meet requirements of the trade, for these companies.

Q. 14. Did the Elyria Iron & Steel Company manufacture any tie plates before you went with said company, and if so, what were they and for how long a time had they been manufactured.

708 A. The Elyria Iron & Steel Company commenced manufacturing tie plates in February, 1904. The first plate they manufactured being the corrugated camber top, four flanged plate, style K, shown on page 16 of the Hart Steel Company Catalogue No. 3.

Q. 15. Is the catalogue which you have referred to the present one of the Hart Steel Company and which you now have in your hand?

A. It is.

Mr. Cooke: The catalogue referred to by the witness is here offered in evidence and is marked "Defendants' Exhibit LL."

Q. 16. Does this catalogue show all the tie plates manufactured by the Elyria Iron & Steel Company and sold by the Hart Steel Company since and before you became connected with said company?

A. It does not. On page 10 it shows a McKee flour flanged plate with the central portion of the shoulder a half inch high. We have manufactured shoulder plates with this central portion a half inch high but with the center flange instead of the four flanged type. We have never manufactured style "E" plate shown on page 12, but have manufactured the plates shown on loose leaf herewith submitted and designated as types "M" and "O." Beside this we manufactured another type of plate which we sold to the Santa Fe Railroad.

Mr. Reed:

Q. 17. Please state if you can the quantity in which the different styles of tie plates, or all of them, have been manufactured by the Elyria Iron & Steel Company and supplied to railroads, since you became connected with the company. And, in this connection, if you can do so, you may give the name of the railroad supplied with any particular kind of plate.

A. We have manufactured between sixty and seventy-five thousand tons of tie plates of various kinds since I went with the Elyria Iron & Steel Company; that would be about twenty-five or thirty million, the greater percentage of these would be of the McKee type plates, but I could not give any accurate estimate of the percentage of the several kinds of plates. These tie plates have been supplied to various roads, the most important being the following: Lake Shore & Michigan Southern, McKee plates and flat top flanged plates; Big Four, and Cincinnati Northern, McKee plates and flat top flanged plates; Michigan Central, McKee plates and flat top flanged plates; Baltimore & Ohio, McKee plates and corru-

709 gated top flat bottom plate; Chicago & Northwestern, corrugated camber top four flanged plate; Chicago, St. Paul, Minneapolis & Omaha, I believe were corrugated, camber top plates; Northern Pacific were style "M" plates; Santa Fe plates were shoul-

dered, with two grooves on the top parallel with the shoulder, and with two short flanges on the bottom also parallel with the shoulder; New York, Ontario & Western, I believe both the McKee type and the corrugated camber top type; Lehigh Valley, McKee plates; New York, New Haven & Hartford, I believe all the plates supplied to this road were McKee plates; Grand Rapids & Indiana, corrugated camber top plates and McKee plates; Seaboard Air Line, McKee plates; Vandalia, McKee plate; Hocking Valley, Toledo & Ohio Central, Kanawa-Michigan, McKee plates; Tidewater and Deepwater, I believe these were McKee plates; Cincinnati, Hamilton & Dayton, I could not now say what type of plate; Pere Marquette, McKee plates; Boston & Albany, I believe these were McKee plates; Chesapeake & Ohio, McKee plates; Central of Georgia, I believe most of these plates at least, were McKee plates; Chicago & Eastern Illinois, I could not say what type of plate it was: Denver & Rio Grande, McKee plates and I believe some of the flat bottom type. Detroit & Toledo Shore Line, I cannot say what type of plate. Lake Erie & Western, I believe McKee plate and flat top flanged plate; Western Pacific, I can not say what type of plate; Western Maryland, McKee plate; Atlanta & West Point, McKee plate and flat top flanged plate.

Q. 18. Is this list of roads exhaustive, or were there others that were supplied?

A. This list contains only the roads to which we furnished plates in large quantities, there being a great many other roads to which we have furnished plates in smaller quantities. We furnished to the roads mentioned in this list, over fifty thousand tons of plates.

Q. 19. Please examine the catalogue Exhibit LL, and the cuts or drawings included therein on pages 23 to 45 both inclusive, and state what those cuts or drawings are and show.

A. They are the cuts and drawings showing the kinds of tie plates, with details and punches, supplied to the various roads whose names are placed at the tops of the respective pages and which plates were supplied by the Elyria Iron & Steel Company in the forms shown, except that the plates furnished the New York Central, shown on page 39, were of style "A" instead of style "C," McKee plate;
710 and with the further exception that the plates rolled for the Alabama, Great Southern R. R. the plans of which appear on page 24, and the plates rolled for the Lake Shore & Michigan Southern Railroad, plans of which are shown on page 35, were rolled in most part, at least, without the small projection at the side of the bottom. These cuts shown in the catalogue were prepared from drawings or blue prints furnished us by the various roads. I would add to the list of roads already given the Alabama Great Southern Railroad for which were rolled the McKee center flange plate; and the Southern Road, for which we rolled the corrugated camber top four flanged plate.

Whereupon an adjournment was taken to 2:30 o'clock P. M.

March 11, 1910—2:30 o'clock p. m.

Met pursuant to adjournment.

Present as before.

WILLIS MCKEE resumed the stand for further direct examination by Mr. Reed:

Q. 20. This loose sheet which appears in the catalogue, has that been in prior catalogues, or is it intended for a new one?

A. It will be in the new one.

Q. 21. But it represents plates that the Elyria Iron & Steel Company is rolling, does it?

A. We have rolled both types of plates shown on this sheet.

Q. 23. Please look at the blue print drawing which I will mark Exhibit MM, and state from what source you obtained it?

A. This blue print was furnished us by the Lehigh Valley Railroad.

Q. 24. When was it furnished?

A. Within the last sixty days.

Q. 25. And what does it represent?

A. It represents a Goldie claw plate, the same being one of their standards.

Q. 26. Has the Elyria Iron & Steel Company rolled any of this style of plate for the Lehigh Valley?

A. No, sir.

Q. 27. Was this plate furnished you in response to a request
711 for a print showing the standards on the Lehigh Valley Railroad?

A. It was.

Mr. Reed: Blue print referred to is offered in evidence as Defendants' Exhibit MM.

Q. 28. Look at the blue print drawing which I will mark Exhibit NN, state from what source you obtained it and what it represents?

A. We obtained this blue print from the Seaboard Air Line Railway, and it is a plan view of the plate which they have been using and which we have been furnishing them, the same being a McKee four flanged plate.

Mr. Reed: Said blue print referred to is offered in evidence as Defendants' Exhibit NN.

Mr. Brown: Objected to as immaterial and irrelevant.

Mr. Reed:

Q. 29. Please look at the blue print which I will mark Exhibits OO, OO^1, OO^2 and OO^3 and state from what source you obtained these, about when and what they represent, and whether or not the Elyria Iron & Steel Company has rolled any plates in accordance therewith for the Lake Shore & Michigan Southern Railroad?

A. These prints were furnished us by the Lake Shore & Michigan Southern Railway within the last sixty days, and represent the kinds

of the tie plate in use on their road. We have furnished all the plates shown on these drawings in large quantities.

Mr. Reed: Said blue prints offered in evidence as Defendants' Exhibits OO, OO^1, OO^2 and OO^3.

Mr. Brown: Objected to as irrelevant and immaterial.

Mr. Reed:

Q. 30. Please look at the blue prints which I show you marked PP, PP^1, PP^2, and state from what source they were obtained, what they represent, whether or not the Elyria Iron & Steel Company has rolled and supplied any such tie plates as are shown and in what quantities, for the C. C. C. & St. L. Railway Company?

A. These prints were furnished us by the C. C. C. & St. L. Railway within the last sixty days, and shows their standard tie plates of which we have furnished them large quantities.

Mr. Reed: Said blue prints referred to are offered in evidence as Defendants' Exhibits PP, PP^1 and PP^2.

Mr. Brown: Objected to as irrelevant and immaterial.

Mr. Reed:

Q. 31. Please look at the two blue prints I will mark QQ and QQ^1, and state from what source you obtained them, what they
712 represent and the fact as to whether the Elyria Iron & Steel Company has supplied any tie plates in conformity with these plans to the Michigan Central Railroad Company, and if so in what quantities.

A. These blue prints were furnished us within the last sixty days by the Michigan Central Railway, and show the tie plates which are standard on their road. We have furnished them these tie plates in large quantities.

Mr. Reed: Said blue prints referred to are offered in evidence as Defendants' Exhibits QQ and QQ^1.

Mr. Brown: Objected to as immaterial.

Mr. Reed:

Q. 32. Please look at the drawing or diagram which I will mark Exhibit RR, state from what source you obtained, it, when, what it purports to represent, whether the Elyria Iron & Steel Company ever rolled any tie plates of the kind shown for the Chicago, Rock Island & Pacific Railway Company?

A. I don't know where this print came from, but it shows what is supposed to be standard on the Chicago, Rock Island & Pacific Railroad. We have never rolled any of this particular plate.

Mr. Reed: Said diagram is offered in evidence as Defendants' Exhibit RR.

Mr. Brown: Objected to as irrelevant and immaterial.

Mr. Reed:

Q. 33. Look at the blue print which I show you marked TT, state from what source it was obtained, when, what it represents,

and whether the Elyria Iron & Steel Company ever rolled such plates for the Toledo & Ohio Central Railway or the Kanawa-Michigan Railway.

A. We obtained this print from the Toledo & Ohio Central Railroad within the last sixty days, and it shows their standard tie plate which we have furnished in large quantities.

Mr. Reed: Said blue print is offered in evidence as Defendants' Exhibit TT.

Mr. Brown: Objected to as irrelevant and immaterial.

Mr. Reed:

Q. 34. Look at the blue prints which I will mark SS and SS[1], state from what source you obtained them, when, what they represent and whether the Elyria Iron & Steel Company ever rolled such tie plates for the Atlanta & West Point Railway Company, if so, in what quantities?

A. These prints were obtained by us within the last sixty days from the Atlanta & West Point Railroad, and they show their standard tie plate which we have furnished in considerable quantities.

713 Mr. Reed: Said blue prints offered in evidence as Defendants' Exhibits SS and SS[1].

Mr. Brown: Objected to as irrelevant and immaterial.

Mr. Reed:

Q. 35. Please look at the blue prints which I will mark Defendants' Exhibits UU, UU[1], UU[2] and UU[3], and state from what source they were obtained, what they represent, when they were obtained, and whether the Elyria Iron & Steel Company has ever rolled any tie plates of the kind therein shown for the Grand Rapids & Indiana Railroad Company and if so in what quantities?

A. These blue prints were obtained by us within the last thirty days from the Grand Rapids & Indiana Railway, and show the tie plates which are standard on their line. We have furnished them these plates in large quantities.

Mr. Reed: Said blue prints offered in evidence as Defendants' Exhibits UU, UU[1], UU[2] and UU[3].

Mr. Brown: Objected to as irrelevant and immaterial.

Mr. Reed:

Q. 36. Please look at the blue print shown you and marked Defendants' Exhibit VV, and tell us from what source you obtained it, when, what it represents and whether the Elyria Iron & Steel Company has ever rolled any of the tie plates of the kind shown therein for the Western Maryland Railroad Company, and if so in what quantities?

A. This blue print was obtained by us from the Western Maryland Railroad within the last sixty days, and shows a plan of the tie plate standard on their road which we have furnished them in considerable quantities.

Mr. Reed: Said blue print offered in evidence as Defendants' Exhibit VV.

Mr. Brown: Objected to as irrelevant and immaterial.

Q. 37. Were all these blue prints and diagrams except the one from the Chicago, Rock Island & Pacific, Exhibit RR, furnished you on request for drawings showing their standard tie plates in use?

A. They were.

Q. 38. Will you please tell us the capacity for tie plates annually of the mills of the Elyria Iron & Steel Company?

A. Our mill has a capacity of forty to forty-five thousand tons per year, but our punching capacity at present is only thirty to thirty-five thousand tons per year.

Q. 39. Could the punching or finishing capacity of the mill be increased, if so would it require much expenditure or additional machinery?

A. Our punching capacity could easily be increased to the
714 capacity of the mill by the installation of extra presses at comparatively small cost.

Q. 40. I am referring in these questions as to capacity and punching capacity, solely to the production of tie plates; were your answers upon this understanding?

A. They were.

Q. 41. What study or investigation have you made in reference to the rolling or production by rolling of tie plates? Have you given the subject any attention, if so, state, in a general way.

A. When I went with our company their practice was not established, so I was compelled to go into all the details of the manufacturing of the plates which we were then manufacturing, and of all the several types which we have started to manufacture since that time.

Q. 42. And have you made a study of the machinery and methods of rolling tie plates during the time you have been connected with the Elyria Iron & Steel Company?

A. I have made a careful study of it from every angle that I could get any information, and we have conducted quite a number of experiments as to the possibility and practicability of rolling different types of tie plates.

Q. 43. Please look at the aluminum model Exhibits O, O^1, O^2, O^3, O^4 and O^{12} and O^{13}: have you ever seen on the market or in use any tie plate identical with any one of these?

A. I have not.

Q. 44. Have you made any examination or investigation of the various forms of tie plates that are now used throughout the United States?

A. I have.

Q. 45. Please state what this investigation has been and how long a period it covered.

Mr. Brown: Objected to as immaterial and irrelevant.

A. As manufacturer we are naturally interested in knowing what our competitors are doing, and what tie plates the railroads are will-

ing to adopt, and every time a new or different tie plate appears we always investigate same carefully to find out its merits and possibilities.

Q. 46. Please select from the aluminum models which have been shown you and which are now before you, any tie plate or tie plates which in your judgment it would not be practicable to roll and give us your reasons for your conclusion:

A. Exhibit O it would be exceedingly difficult to maintain the section on, although it is barely possible that this could be
715 done. Exhibit O^1 I would say it would be impossible to roll as shown, as it would be out of the question to develop the top and bottom flanges as exhibited. Exhibit O^2 and Exhibit O^4 would also be exceedingly hard to develop commercially, and I doubt whether same could be done by rolling. Exhibit O^3 I believe it would be absolutely impossible to develop by rolling, as the reduction in the body of the plate in the bull-head pass of the rolls would be so greatly in excess of the reduction on the long central flange that the central flange would be very badly broken by the body of the plate being enlongated faster than the flange. The bars for Exhibits O^{12} and O^{13} could be easily rolled, but the punching of the claws would be difficult, especially in O^{13}.

Q. 47. What is your judgment as to the lot being practical tie plates, so far as the construction is concerned?

A. I do not believe that any one of these plates is a commercial proposition to be manufactured from rolled steel. Possibly I better explain that by saying that I believe that none of these plates contains sufficient merit to justify the extra manufacturing cost on account of the peculiarity of its shape or form.

Cross-examination by Mr. Brown:

X Q. 48. You have stated that certain of the tie plates manufactured by the Elyria Iron & Steel Company were sold to certain roads in "large quantities" and to other roads in "smaller quantities," and again to other roads "in considerable quantities." Please give us some idea of what you had in mind in the way of tonnage by the use of these three expressions.

A. I would say, in general terms by "large quantities" I would mean in the neighborhood of five hundred tons up to seven or eight thousand tons; and smaller quantities, or in considerable numbers, would be less than five hundred tons.

X Q. 49. And did I understand you correctly to say that the total output of tie plates of all kinds by the Elyria Iron & Steel Company, from May, 1904, when you first went with that company, to date, is between sixy and sixty-five thousand tons?

A. Sixty and seventy-five thousand tons.

X Q. 50. Do you wish to be understood as intimating that the type of tie plates which your company has furnished to the different railroads mentioned in your deposition are the only tie plates purchased by those roads during the same period?

716 A. No, sir, I do not.

X Q. 51. Or that those roads buy exclusively of your company?

A. No, sir, I do not.

X Q. 52. You have mentioned "another type of plate which we sold to the Santa Fe Railroad." Please describe that plate, state when you first sold it, to that road, and in what quantities.

A. The plates that we furnished the Santa Fe Railroad were shouldered plates with two grooves on the top parallel with the shoulder, and with two short flanges on the bottom which were also parallel with the shoulder. These plates were furnished by us to the Santa Fe Railroad in the fall and winter of 1908-9; the exact quantity I am not able to say, although the original contract called for five thousand tons. I believe we furnished somewhat in excess of this quantity.

X Q. 53. How do you know that the original contract called for five thousand tons?

A. Because I was the person that had the conversation with Mr. Hodges at the time the contract was taken, together with Mr. Wood.

X Q. 54. And was that contract in writing?

A. Not at that time, but it was submitted *to* writing.

X Q. 55. And did you ever see it afterwards?

A. I did. When I say I was present when the contract was taken, I possibly better qualify that by saying I was present during the preliminary arrangements and at the time the proposition was made.

X Q. 56. But the contract was afterwards reduced to writing and you saw it?

A. Yes, sir.

X Q. 57. Do you happen to recall the date of the written instrument?

A. I do not.

X Q. 58. Do you remember whether or not that contract provides either in itself or by reference to other documents, for any guarantee to your company, directly or indirectly against the cost or expenses of litigation that might grow out of any law suit for infringement of patent based upon your manufacture of the tie plate called for by that contract?

Mr. Reed: That is objected to; first, as not cross-examination and improper; second, as calling for the contents of a written document;
717 third, as an effort to bring into the case an element that is totally foreign to it, and fourth as incompetent and irrelevant.

A. Yes, sir, I do remember whether such thing was in it or not.

X Q. 59. Have you that contract in your possession or control?

Mr. Reed: Same objection.

A. My personal possession or control, do you mean?

X Q. 60. Yes.

A. I have not.

X Q. 61. Is that contract available to you for reference, and could

you get it to produce it in this case if it were called for and proper to be produced?

Mr. Reed: Same objection.

A. I don't know. The handling of contracts, and contracts as a whole are entirely out of my province.

X Q. 62. You know as a matter of fact, do you not, that, in pursuance of that contract your company is indemnified by the Santa Fe Railroad, directly or indirectly, by that road for all the expenses of this litigation and that the Santa Fe Road is in fact directly *and* controlling the defense in these cases?

Mr. Reed: That is objected to in its entirety, and as to each portion, first, on the ground that it is an endeavor to prove the contents of a written document which if proper that is, if the document is proper, can be very readily obtained through proceeding in the proper manner; secondly, as calling for matter that is not within the scope of his direct examination, and, therefore, not proper cross-examination; thirdly, as calling for alleged facts that are not in any way germane to this litigation.

Counsel for defendants advises the witness that it is winthin his province to decline to answer the question if he so wishes.

A. I will decline to answer the question.

Mr. Brown:

Q. 63. And for what reason, please?

A. For the reason that our counsel seem to think the question is not a proper question and have advised me that it is within my province to decline to answer same.

Mr. Brown: Complainant's counsel here states that he believes it to be material to the complainant's case that the contractual relation between the defendant and, directly or indirectly with the Santa Fe System with respect to the purchase of the tie plates referred to by this witness and with respect to the guarantee of immunity to
718 the defendant of expenses growing out of this litigation, and for that reason complainant's counsel requests counsel for defendant to produce such contract and such document or documents as may be referred to therein or be related thereto with respect to such indemnity or guarantee referred to, that the same may be produced in evidence.

X Q. 64. Will you confer with the officials of your company and ascertain whether or not they are willing to have the contract and associated document or documents disclosed in evidence in this cause and if so will you produce the same and hand them to Mr. Reed, defendants' counsel, to be attached to this your deposition?

A. I will.

WILLIS McKEE.

Whereupon an adjournment was taken to March 12, 1910, at 10:30 o'clock A. M.

March 12, 1910—10:30 o'clock a. m.

Met pursuant to adjournment.
Present as before.

JOHN M. MCCARTHY, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.
A. John M. McCarthy: Purchasing Agent for Rock Island Lines, Chicago.
Q. 2. How long have you been the purchasing agent for the Rock Island System?
A. Since November 18, 1907.
Q. 3. Before that how were you connected with the Rock Island System?
A. Chief Clerk of the purchasing agent.
Q. 4. For about how long?
A. Since August 1, 1904.
Q. 5. Does the Rock Island System use tie plates?
A. Yes, sir.
Q. 6. Have they been and are they purchased through your department?
A. Yes, sir.
719 Q. 7. What kind of plates does the Rock Island System use at present?
A. Their own standard.
Q. 8. Look at the drawing marked Exhibit RR, and state whether that shows the present standard of the Rock Island tie plates?
A. This is our present standard for all sections of rail except 100 pound.
Q. 9. And what kind of tie plates are used on the 100 pound rails?
A. Malleable iron tie plates.
Q. 10. And what is their form?
A. I can't answer, I haven't got the drawings, they have not been prepared yet.
Q. 11. How long has the Rock Island used the present standard shown by Exhibit RR?
A. Since September 7, 1906.
Q. 12. And in about what quantities is the Rock Island using this form of plate?
A. Our contract for the year 1910 is for two million.
Q. 13. And in the past two or three years in about what quantities have they been used?
A. We purchased over a hundred thousand in 1908 and over two hundred and fifty thousand in 1909.
Q. 14. And from what concerns have you purchased this standard plates?
A. From the Railroad Supply Company and the Sellers Manufacturing Company.

Q. 15. You have no interest in this suit, I believe, personally?
A. No, sir.

Mr. Reed: I again offer in evidence Exhibit RR.
Mr. Brown: Objected to as irrelevant and immaterial. And the deposition is objected to as irrelevant and immaterial.

Cross-examination waived.

J. M. McCARTHY.

720 JOSEPH T. MARKHAM, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.
A. Joseph T. Markham; residence, Chicago; General Sales Agent of the Sellers Manufacturing Company.
Q. 2. What is the business of the Sellers Manufacturing Company?
A. We manufacture and sell tie plates and angle bars.
Q. 3. How long has the Sellers Manufacturing Company been selling tie plates?
A. Four years that I know of.
Q. 4. Does it actually manufacture tie plates?
A. Yes, sir.
Q. 5. Where is its mill located?
A. Mayfair, Chicago.
Q. 6. And about what is its capacity for tie plates?
A. About twenty thousand tons of tie plates a year.
Q. 7. What kind of tie plates does the Sellers Manufacturing Company make?
A. We manufacture the Sellers anchor bottom tie plate and a plate that we call the Sellers corrugated bottom tie plate.
Q. 8. Please look at the pamphlet which I show you which will be marked Defendants' Exhibit WW, and state whether that is a catalogue of the Sellers Manufacturing Company?
A. It is.
Q. 9. Does this catalogue show both forms of plates?
A. No, sir, it only shows the anchor bottom.
Q. 10. What is the form of the other tie plate?
A. The plate that the Rock Island lines are now using which is the corrugated bottom plate.
Q. 11. Look at the Exhibit RR and state whether that shows the other form?
A. Yes, sir, it does.

Mr. Reed: Said catalogue offered in evidence as Defendants' Exhibit WW.
Mr. Brown: Objected to as irrelevant and immaterial.

Mr. Reed:

Q. 12. Please look at Defendants' Exhibit N and state whether

that is a specimen of the Anchor bottom tie plate made by the Sellers Manufacturing Company?

A. It is.

721 Q. 13. For what roads does the Sellers Manufacturing Company manufacture and supply tie plates?

A. To the Illinois Central; Chicago & Northwestern; Chicago Burlington & Quincy; Chicago, Rock Island and Pacific and others

Q. 14. Are these four roads which you have mentioned the principal ones?

A. Yes, sir.

Q. 15. Could you give us the names of the other roads?

A. I wouldn't care to.

Q. 16. Could you state about the annual output of the Sellers Manufacturing Company in tie plates?

A. Our tie plate output will run about 20,000 tons a year.

Q. 17. I believe you were subpœnaed?

A. Yes, sir.

Mr. Brown: Deposition objected to as irrelevant and immaterial. Cross-examination waived.

JOSEPH T. MARKHAM.

GEORGE L. MANSFIELD, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.

A. George L. Mansfield; residence, Chicago; mechanical engineer for the Chicago & Alton Railroad.

Q. 2. Does the Chicago & Alton Railroad use tie plates?

A. They do.

Q. 3. What is the form of tie plate that is used by the Chicago & Alton at the present time?

A. The Sellers.

Q. 4. Look at Exhibit N, and state whether that is a specimen of the tie plate used?

A. Yes, that is the Sellers.

Q. 5. And is this Exhibit N the present standard?

A. I believe it is.

Q. 6. For about how long has the Sellers tie plate been standard on the Chicago & Alton?

A. Between three and four years.

Q. 7. Before the Sellers was adopted as standard on the Chicago & Alton road, what kinds of tie plates were used?

722 A. We used a few of the Wolhaupter, the Glendon and the Servis.

Q. 8. Did any of these tie plates have shoulders?

A. No. Oh, we used another kind, the Harriman plate, it had a shoulder and a flat bottom.

Q. 9. And did it have corrugations on the top parallel with the shoulder?

A. Yes.

Q. 10. What was the reason that the Chicago & Alton abandoned the Servis, Wolhaupter and the Glendon?
A. They destroyed the tie, caused it to rot, &c.
Q. 11. That was because the flanges were——
A. —too deep.
Q. 12. Too deep?
A. Yes.
Q. 13. About how many of the Wolhaupter plates did you use?
A. About four thousand.
Q. 14. And about how extensively have you used the Sellers?
A. About ninety thousand.

Cross-examination by Mr. Brown:

X Q. 15. About how many tie plates of each of the four types Servis, Glendon, Wolhaupter and the flat bottom corrugated shoulder top plate has the C. & A. Company used, state approximately.
A. Servis, about fifteen thousand; Glendon about fifty thousand; the Wolhaupter about four thousand and the Harriman plate about fifty thousand.
X Q. 16. When did you last buy the Harriman plate?
A. About 1905.
X Q. 17. And at the present time the C. & A. road is buying only the Sellers plate?
A. Yes.

GEORGE L. MANSFIELD.

723 March 30, 1910—2.30 o'clock p. m.

LESTER S. CARROLL, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.
A. Lester S. Carroll; 4622 North Hermitage avenue, Chicago; purchasing agent for Chicago & Northwestern Railway.
Q. 2. How long have you been purchasing agent for the Chicago & Northwestern Railway Company?
A. Nearly ten years.
Q. 3. During that period have you purchased tie plates for that road?
A. Yes.
Q. 4. When, so far as the records of your office show, did the Chicago & Northwestern Railroad Company begin to use tie plates?
A. In the year 1899.
Q. 5. And what quantity was used that year, as shown by the records?
A. 24,450.
Q. 6. Do you know of what kind they were?
A. As near as I can tell from the records they were Glendon and Goldie tie plates.
Q. 7. Beginning in 1900, coming down to the present year, will

you please give the numbers of quantities of tie plates purchased annually by the Chicago & Northwestern Railway, if you have had such statistics compiled.

A. 1900, 205,799; 1901, 399,040; 1902, 177,206; 1903, 578,695; 1904, 759,004; 1905, 1,749,770; 1906, 785,854; 1907, 1,550,355; 1908, 585,451; 1909, 2,164,586.

Q. 8. And in the year 1908 what kind of tie plates were purchased, if you know?

A. Principally the Sellers plate; we purchased some of the Hart Steel Company plates.

Q. 9. Out of the 585,451 tie plates purchased in 1908, what number were Sellers plates?

A. 428,193.

Q. 10. In the year 1909 what tie plates were purchased, and the quantities of each?

724 A. We purchased from the Sellers Company 1,949,526; from the Railroad Supply Company, 215,060. These figures are from our records, they were so compiled and are supposed to be correct.

Q. 11. Please look at Exhibit N, and state whether or not the Sellers plates, of which you have spoken are like that?

A. They are in a general way; the size and punching varies for the various types of rail.

Q. 12. But in general configuration that is a specimen of the Sellers plate?

A. Yes, sir, the bottom and the top shoulder.

Q. 13. Do you recall the kind of tie plates purchased in 1909 of which you gave the quantity as 215,060, from the Railroad Supply Company?

A. I think I could show you the type of plate.

Q. 14. Please look at the tie plate shown on page 3 of Complainant's Exhibit 22, styles Wolhaupter shoulder flange tie plate, and state whether that is the kind of tie plate purchased in 1909 of the Railroad Supply Company?

A. I think that is the plate they furnished us. I thought this was the kind, but will send out on the road and get one. I am not dead sure of it, I will have to send out and get a specimen.

Q. 15. Referring to the different purchases of tie plates from 1900 to 1907, inclusive, of which you gave the statistics, can you tell us the kinds of tie plates which were purchased during that period?

A. I can tell you some of them. We purchased the Glendon, Goldie, Wolhaupter, the single flanged Sellers; that is all that I am sure of.

Q. 16. Could you tell us the quantities of the different kinds?

A. No.

Q. 17. And what are your purchases or contracts for the years 1910, and of what variety of plates?

A. We have a contract with the Sellers Company for our 1910 requirements.

Q. 18. Amounting to about what quantity?

A. It is estimated from a million and a half to two million plates.

Q. 19. What is the fact as to the tie plates which you have purchased and the quantities of which you have given us, having been actually installed and used on the Chicago and Northwestern Railroad?

725 A. They were practically all installed.

Q. 21. I believe you have no interest in this suit?

A. No, sir.

Q. 22. And were subpœnaed to attend?

A. I was.

Cross-examination by Mr. Brown:

X Q. 23. Describe the Glendon plate that you purchased in 1899.

A. I can't do it, I wasn't purchasing agent at that time, I only took that information from the records.

X Q. 24. Did you ever see the Glendon plate?

A. Yes, sir.

X Q. 25. What does it look like?

A. Well, I don't know that I can explain it, but I can show it to you. We always described it as a four flanged plate with the center flanges shorter than the outside flanges.

X Q. 26. And the plates that you purchased—and when I say you I mean the Chicago & Northwestern Railroad—were simply recorded as Glendon plates and not otherwise described, were they?

A. The Glendon plates were so recorded.

X Q. 27. And of whom were they purchased?

A. I can't say that now.

X Q. 28. Referring to the Goldie tie plate purchased in 1899, was the word Goldie the only designation of those plates on your records?

A. That is the only term by which we know those plates.

X Q. 29. Do you know of whom they were purchased?

A. I don't, no, sir.

X Q. 30. Were Goldie plates purchased at any time other than during the year 1899?

A. Yes, sir, I beg pardon, did you say Goldie?

X Q. 31. Goldie. In what years other than 1899 were Goldie plates purchased?

A. I can't tell you that without referring to the record.

X Q. 32. Do you know of whom they were purchased?

A. Can't give you that without referring to the records.

X Q. 33. Do you know whether all the Goldie plates purchased by the Chicago & Northwestern Railroad were of the same type?

A. No, sir, I do not.

726 X Q. 34. Were they ribbed plates or claw plates?

A. Some of the plates purchased I have never seen. The Goldie plates purchased since I have been purchasing agent were known as the Goldie Claw plate.

X Q. 35. Describe the top surface of that plate.

A. My recollection of it is that it was flat, smooth, with a shoulder.

X Q. 36. What kind of plates were purchased from the Hart Steel Company?

A. I can't give you that information without sending for samples; I don't know as I could identify them now. No particular description appears on our records.

X Q. 37. Your road appears to have purchased quite a few of the Sellers plate; was there any special reason for the selection of that type of plate?

A. Yes, sir.

X Q. 38. Please state what it is.

A. Commercial reasons that I don't care to state.

X Q. 39. It is largely a question of price, is it not?

A. You are trying to get me to say just what I don't want to say.

X Q. 40. Is it not a fact, Mr. Carroll, that the Sellers plate purchases by your road amount to what might properly be called a scrap-conversion proposition; that is to say, the road turns in its scrap in part payment for the plates?

A. That is a fact.

X Q. 41. How did you get the statistics that you have given in your answer to question 7?

A. The statistics were compiled by the bookkeeper employed in my office, from our ledger.

Redirect examination by Mr. Reed:

R. D. Q. 42. The ledgers from which these statistics were compiled are regular books kept as a part of your office?

A. Yes, sir.

R. D. Q. 43. Aside from the commercial features, do you regard the Sellers plate, and do the engineers of your road regard the Sellers plate as a desirable and stable plate for actual use?

Mr. Brown: The question is objected to as calling for hearsay evidence, it not having — shown particularly that this witness knows what the engineers of the Northwestern road think about
727 the Sellers plate; and also as incompetent, and objectionable because this witness is not qualified as an expert in tie plates or as having any knowledge of their qualities in actual service, although it is shown that he has never seen a number of the plates that he has actually purchased and can not now describe the kind of plates that his road uses, so that it is clearly incompetent for him to express his opinion as to the qualities and general characteristics of such plates.

A. I can't speak for the engineers. I know that the plate is regarded by road masters as a very desirable one.

Mr. Brown: The last objection is repeated and the answer is objected to as not responsive to the question.

R. D. Q. 44. Has the experience of the Chicago and Northwestern Railroad Company in the actual use of the Sellers plate been satisfactory?

Mr. Brown: Same objection.

A. So far as I know, it has. I was instructed to purchase them again for 1910.

LESTER S. CARROLL.

Mr. Reed: Counsel for defendants offers in evidence the letter dated Philadelphia, February 18, 1910, addressed to M. J. Collins, General Purchasing Agent, and signed L. R. Zollinger, Engineer of M. W., and the four blue prints and one white print attached thereto, the same being marked Exhibits XX, YY, ZZ, AAA, AAA[1] and AAA[2], and the said letter is as follows:

The Pennsylvania Railroad Company.
Philadelphia, Baltimore & Washington Railroad Company.
Northern Central Railway Company.
West Jersey & Seashore Railroad Company.

L. R. Zollinger, Engineer of Maintenance of Way.

Subject:

GENERAL OFFICE, BROAD STREET STATION,
Philadelphia, Feb. 18, 1910.

Mr. M. J. Collins, General Purchasing Agent, Atchison, Topeka & Santa Fe Railway System, Chicago, Ill.

DEAR SIR: Your letter of the 25th ultimo to Mr. D. S. Newhall, our Purchasing Agent, relative to the different kinds of tie
728 plates used on our lines since 1890, has been referred to me, and I take pleasure in replying thereto as follows:

Our records show that on June 23, 1897, we approved for experimental use plan 56140, of the Glendon pattern of tie plate, and continued to use this plate until 1899, when the plan was made obsolete and superseded by plan 56348, showing ribbed tie plate chair (Glendon pattern), which plan was approved for experimental use January 21, 1899. This plan was made obsolete and plan 56518, showing ribbed tie plate chair, (Glendon pattern) was approved for experimental use July 31, 1899. This plan was made obsolete and superseded by plans 58036, P. R. R. Standard combination tie plate, approved June 24, 1904, and 56773, P. R. R. Standard (cushion) Tie Plate, approved May, 1904; these latter two plans being our standards at the present time.

The abandonment of one plan and adoption of another in an experimental way, as described above, arose from changes in the plans from time to time as a result of our experience in the use of the plates, until the time of the adoption and standardizing of the two plans last mentioned, which, as you will observe, did away with the use of a patented article.

The plates shown on the two standard plans 58036 and 56773 are giving us very good satisfaction.

Prints of all the plans mentioned above are enclosed herewith.

Yours truly,

L. R. ZOLLINGER,
Engineer M. W.

Enc. prints.

It is stipulated that if the said L. R. Zollinger were called, sworn, examined and cross-examined, he would testify as set forth in said letter, and the said letter and the blue prints and white print therein referred to, are received in evidence with the same force and effect as though said witness had been so sworn, examined and cross-examined.

Counsel for defendants offer in evidence the letter of W. Hunter, Chief Engineer, dated Philadelphia, March 21, 1910, addressed to Frank F. Reed, attorney, and the blue print therein referred to and attached, the same being marked Defendants' Exhibits BBB[1] and BBB[2], respectively, and which said letter is as follows:

729 Philadelphia & Reading Railway Company,
(The Reading),
Office Chief Engineer, Reading Terminal,

PHILADELPHIA, March 21, 1910.

Mr. Frank F. Reed, Attorney, A., T. & S. F. Ry. Co., 708 Rector Building, Chicago, Ills.

DEAR SIR: I send you under separate cover, by this mail, print of our standard plan of tie plates. This plate was adopted as standard in 1904, prior to which time we did not have a standard tie plate. Since then, practically all of the curves on our line have been equipped with this plate. We have not yet used them on tangents excepting in a few instances.

Yours truly,

W. HUNTER,
Chief Engineer.

Said letter and blue print are, by stipulation and consent of parties, received in evidence with the same force and effect as though said Hunter had been duly sworn and testified under examination and cross-examination, as stated in said letter.

It is stipulated between counsel that if W. L. Darling were called, sworn and duly examined he would testify that he is the Chief Engineer of the Northern Pacific Railway Company; that the Northern Pacific Railway Company has used tie plates between fifteen and twenty years; that the present standard of tie plate for the Northern Pacific Railway Company are ninety pound rail plates as shown by two blue prints which are marked Defendants' Exhibits CCC[1] and CCC[2], and which are offered in evidence by defendants as such exhibits; that the design shown in said blue prints is used for all weights of rail and varies only in proportion and has been the standard for about two years.

Adjourned to office of Clerk of the United States Circuit Court, Pittsburgh, Pa., April 5, 1910.

730 April 21, 1910—2:30 o'clock p. m.

By consent and notice the taking of depositions on the part of defendants, resumed at the office of Frank F. Reed.

Present as before, Mr. Reed, Mr. Brown, and Mr. Cooke.

W. A. WALLACE, a witness of lawful age, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.

A. W. A. Wallace; Chicago; civil engineer.

Q. 2. Have you at any time been connected with the Monon Road, if so, in what capacity and for how long?

A. I started working in 1887 for the Monon railroad as assistant engineer; was in that capacity until November, 1899, at which time I was promoted to the position of Division Engineer and held the same position until April 18, 1910.

Q. 3. Please state whether, while connected with said road, the road used tie plates?

A. Yes, sir.

Q. 4. About when was the use of tie plates begun on the Monon road, if you know?

A. Either in 1901 or 1902.

Q. 5. What kind or style of tie plates was used?

A. The tie plate first used by the Monon was known as the Wolhaupter plate.

Q. 6. Please describe the plate as to its configuration, upper and lower surface, &c.

A. The plate was composed of a plate of steel so rolled as to make ridges parallel to the plate on the lower side, to have the same bury itself into the wood and thereby holding the plate rigid; and the top was corrugated practically on the same lines as the ridges on the under side.

Q. 7. Did these plates have shoulders?

A. The first two or three years we used the plates without the shoulder and the last year of our use of the Wolhaupter tie plate we used what is known as the shoulder plate. The same being similar to the other plate, with the exception of a shoulder on the upper side for the rail to rest against.

731 Q. 8. Did these top corrugations and lower flanges run parallel to the tie or to the rail?

A. They run lengthwise of the plate which was supposed to be set so that these corrugations or ridges would be parallel to the tie or at right angles to the rail.

Q. 9. When, if ever, did the Monon road change the style of tie plate?

A. I believe it was in 1906 that the Monon changed from the Wolhaupter to the Goldie.

Q. 10. And since the time of the *time of the* change what kind of tie plates have been used on the Monon?

A. With the exception of a few Sellers tie plates which were used for experimental purposes, the standard of the Monon has been the Goldie plate.

Q. 11. And what is the present standard?

A. The same conditions exist at the present time.

Q. 12. Please describe the Goldie plate that has been so used.

A. The Goldie plate is a bar of steel five inches wide, about eight inches long and 3/8 inches thick; along one edge of the bar is a rib or shoulder for the purpose of keeping the rail from moving outward, and on the bottom side located towards the corners are four claws about an inch and a half in length and about three-quarters of an inch in width, with approximately a quarter of an inch in thickness. These claws are sharpened in chisel fashion to allow an easy penetration of the claws into the wood, so the plate may have a firm bearing on the tie.

Q. 13. This shoulder, of course, was on the top side of the plate?

A. Yes, sir.

Q. 14. And with the exception of the shoulder what as to the top surface of the plate?

A. With the exception of the shoulder the plate presents a flat surface.

Q. 15. Please state what reason, if any, there was for the change from the Wolhaupter to the Goldie plate?

A. The tie plates used on the Monon road were used solely on curves. In the practice we found that the Wolhaupter did not positively hold the rails from moving outward, and to get something more secure we went to the Goldie plate.

Q. 16. What was the result of your use of the Goldie plate in this respect?

732 A. The Goldie plate held the rail right where it was originally put.

Q. 17. In about what quantities does the Monon road at present use tie plates?

A. The last order of tie plates, to my recollection, was in the spring of 1907, at which time we purchased seventy odd thousand of the Goldie plates.

Q. 18. I believe you were subpœnaed in this case?

A. Yes, sir.

Q. 19. And have no interest in it?

A. None whatever.

Cross-examination by Mr. Brown:

X Q. 20. Are you employed by the Monon road at the present time?

A. No, sir, I quit the service last Monday.

X Q. 21. And where are you employed at the present time?

A. I am doing nothing at the present time, resting up for future employment.

X Q. 22. Are you connected, directly or indirectly, or do you expect to be connected with the Santa Fe Railroad?

A. I am not connected, directly or indirectly, and have no idea of being connected with the Santa Fe road.

X Q. 23. The Goldie plate which you have referred to, is commonly known as the Goldie claw plate, is it not?

A. I believe it is.

X Q. 24. Of whom did the Monon road purchase the Goldie claw plate?

A. I am not sure, but think it was through John G. Miller, of Chicago, he, I believe being the agent for that plate.

X Q. 25. Do you happen to know by whom those plates were rolled?

A. No, sir.

X Q. 26. Do I understand you correctly that the first use of the Goldie claw plate by the Monon road was in the year 1906, and that the last order for those plates was in 1907?

A. We placed but one order which was either in 1906 or 1907, since then I have no recollection of any additional orders.

X Q. 27. And that was about 70,000 plates you said?

A. That is my recollection.

X Q. 28. And you placed these tie plates only on curves, on the Monon road?

733 A. On curves and at switch points where there is considerable side pressure to the rail. In no place have we put them on straight back.

X Q. 29. And the Wolhaupter plates previously used, were they used only on curves and not on straight track?

A. They were used under the same conditions as the Goldie were afterwards used, not using any on straight track.

X Q. 30. About how many Wolhaupter tie plates were purchased by the Monon road from the time of their first use in 1901 up to 1906 or 1907, when the Monon purchased this one lot of Goldie plates?

A. I should judge between seventy and eighty thousand.

X Q. 31. Did the Wolhaupter tie plates that were so purchased and used, extend over the entire Monon system, or were they used only on a portion of the system?

A. They were used on curves greater than three degrees, on the south end of the road, or the part known as the second division.

X Q. 32. That extends from where to where?

A. From Lafayette to Louisville, including the branch to French Lick Springs, and the branch to Switz City.

X Q. 33. And — what divisoin or portion of the road were the Goldie plates placed?

A. The same territory.

X Q. 34. Were the Wolhaupter plates removed from their location and the Goldie plates substituted entirely?

A. In a majority of cases the Wolhaupter plate was removed and the Goldie substituted.

X Q. 35. What became of those Wolhaupter plates that were removed?

A. Practically all the Wolhaupter plates that were removed were

so bent that they were put into the scrap pile, and I suppose sold as scrap.

X Q. 36. And were the Wolhaupter plates that were removed the first Wolhaupter plates that you referred to, or the second type, namely, those having a shoulder?

A. The first plates purchased, or the ones without the shoulder, were the ones removed.

X Q. 37. Do you remember the size and weight of those Wolhaupter plates without the shoulder?

A. I believe they were 4½ by 8, ¼ inch thick.

X Q. 38. Approximately what did they weigh?

A. I couldn't say.

734 X Q. 39. And what was the dimensions of the Wolhaupter shoulder plate?

A. I believe they were 5 by 8, ⅜ in thickness.

X Q. 40. They were heavier then, than the others?

A. Yes, sir. We found that with the heavy rolling stock and heavy loads, that the former plate was not of sufficient strength and we went to the heavier plate.

X Q. 41. I suppose the increased amount of traffic on the Monon road during these years from 1901 on, was accompanied also by an increase of weight in the rolling stock, wasn't it?

A. Yes, sir, a big increase in the weight of the power, big increase in the weight and loads of cars, the load being increased from about 60,000 to the car, to from eighty to a hundred thousand pounds to the car.

X Q. 42. What weight rail was laid on those portions of the second division where the Wolhaupter plates were installed?

A. The first Wolhaupter plates were used under a 67 pound to the yard rail. The latter ones, and the Goldies, were laid under 75 pound to the yard rail.

X Q. 43. With respect to the Wolhaupter shoulder plate, how does the Goldie claw plate compare in dimensions and weight?

A. The Goldie is a trifle larger, and I think weighs more.

X Q. 44. And how does the Goldie claw plate compare with the earlier Wolhaupter plates?

A. Considerably larger and weighs more.

X Q. 45. You stated that the Goldie claw has been adopted as a standard by the Monon; when was that plate adopted?

A. Either in 1906 or 1907 it was adopted as a standard, although there is prospects of changing to a different standard at the time that I left the road.

X Q. 46. What officials of the Monon road had to do with the adoption of the Goldie plate as a standard?

A. The recommendation of the Division Engineer who desired to use the same was made to the General Manager and he in turn ordered the same.

X Q. 47. The General Manager, then, was your next superior officer, was he?

A. Yes, sir.

X Q. 48. And what is the name of the General Manager in 1901 down to the present time?

A. H. W. McDoel was Vice-President and General Manager, also President and General Manager, up to about 1907, at which
735 time Mr. B. E. Taylor became General Manager, and he is the present General Manager.

X Q. 49. Has the Monon road purchased any tie plates other than the Wolhaupter, the Wolhaupter shoulder plate, the Goldie claw plate and a few Sellers plates that were used for experimental purchases?

A. They only purchased the Wolhaupter and Goldie plate. The small amount of Sellers plates was donated by that company for us to try.

X Q. 50. Were those Sellers placed in the tracks at the time of the Monon road?

A. Yes, sir, they were placed in the track about eighteen months ago, and still in service.

X Q. 51. Were they put on curves or tangents?

A. On a four degree curve.

X Q. 52. And since the 70,000 Goldie claw plates were purchased, as I understand you, the Monon road has not purchased any other tie plates?

A. No, sir. The last order of Goldie plates completed the tie plating of all the curves we desired, and since then no others have been purchased.

X Q. 53. On what division of the road and at what point in that division were the Sellers tie plates installed?

A. They were used on the second division, on a curve about four miles north of Greencastle, Indiana.

X Q. 54. To your knowledge have there been any official reports made of the result of the testing of the Sellers plates on the Monon road?

A. There has been no official report of the same made to date. I have, in a personal conversation with the General Manager, stated that these plates were holding up very well, and thought that they would be a success.

X Q. 55. But the test so far made, and your oral report which you have just referred to, have not produced a change of standard from the Goldie plate, as yet, have they?

A. No, sir. In testing out a plate I endeavored to have three to four years' wear so the different conditions of the ties can be noted and the effect of the plate on the various condition of ties. For that reason no official report of these plates was made.

X Q. 56. What is the character of the ties on which the Wolhaupter plates have been used on the Monon system?

A. The usual condition of ties as exists in practically all track where each year they change a certain per cent of the ties. In
736 the particular portions in which the Wolhaupter plates were used, these ties were of the oak variety, principally white oak, and some of the ties were seven to eight years old, while some were new that spring.

X Q. 57. This practice of changing a certain percentage of the ties in track each year, is a custom not limited to the Monon system, is it, but rather it is general among all the roads?

A. As far as my knowledge, goes, it is general with all roads.

X Q. 58. And when the change was made from the Wolhaupter to the Wolhaupter shoulder plates, were the shoulder plates laid on new ties, or on ties on which the Wolhaupter plates had previously been laid?

A. Both. Where we put in new ties that spring, the plate was put on a new tie, at the time the change was made; where the old tie still remained in the track, it was placed on the old ties.

X Q. 59. And I suppose that answer applies equally to the installation of the Goldie claw plate, does it not?

A. Yes, sir.

X Q. 60. Were the oak ties treated ties?

A. No, sir, we did not begin to treat ties until the spring of 1908.

W. A. WALLACE.

CHARLES E. GAYLORD, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation.

A. Charles E. Gaylord; 5444 Ingleside avenue; mechanical draughtsman.

Q. 2. How long have you been engaged in that business?

A. Between 25 and 30 years.

Q. 3. Please look at the drawings marked as taken from various volumes of the Railroad Gazette and the Railway Age and Northwestern Railroader, and being marked Defendants' Exhibits AA, BB, CC, DD, EE, FF, and GG, and state whether or not they were drawn by you?

A. Some of the drawings mentioned were made by myself,
737 and all of the rest were made by an assistant under my direction and supervision.

Q. 4. Have you compared them all with the original drawings?

A. I have.

Q. 5. At whose request were these drawings made?

A. At the request of Mr. Frank F. Reed.

Q. 6. Where did you get or find the volumes from which they were taken?

A. In the office of the Railway Gazette, Plymouth Building, Chicago.

Q. 7. Did you find the drawings, that is, the original drawings, marked in any way?

A. I did.

Q. 8. And were they marked with Defendants' Exhibit- AA to GG, inclusive, as shown on these drawings?

A. They were.

Q. 9. And are the volume and dates and packages in which the originals appeared indicated on the respective drawings?

A. They were.

Q. 10. And are these various drawings reproductions of the originals as they appear in those volumes?

A. They are all reproductions of the original, as found in the various volumes stated, some being made twice the size of the cuts therein shown, and others being made one and one half times the original size.

Q. 11. And are these proportions or scales indicated on the respective drawings?

A. The scale is indicated on each sheet of drawings.

Q. 12. And each drawing is an accurate reproduction of the original on the basis of the scale indicated thereon?

A. Yes, sir, it is.

Mr. Reed: These are offered in evidence as reproductions of the various cuts heretofore marked Defendants' AA to GG, both inclusive, from the various volumes of the Railroad Gazette and Railway Age and Northwestern Railroader.

Mr. Brown: The cardboard drawings identified by the witness are objected to for the same reasons heretofore stated as objections to the illustrations in the two publications referred to and offered in evidence, no objection being made to the cardboard drawings as such, that is, because they purport to be copies.

Q. 13. Please look at the cardboard drawing containing several cuts, headed Railroad Gazette, Vol. 19, September, 1887, p.
738 630, drawing one and one half size, and identified as Defendants' Exhibit DDD, and state what that is.

A. It is a drawing prepared by an assistant in my employ, under my direction and supervision, being an exact reproduction at one and one half the size, of cuts found on page 630 of the Railroad Gazette, Vol. 19, of September 30, 1887.

Q. 14. Have you compared it with the original, and do you know that it is accurate?

A. Yes, sir, I have compared the same and find it an exact reproduction.

Mr. Brown: Cross-examination waived.

CHAS. E. GAYLORD.

Mr. Reed: Counsel for defendants offer in evidence that portion of page 630 of the Railroad Gazette, in the volume dated 19th quarto volume, January 1st, 1887, to December 31, 1887, beginning with the words "The post bearing plates for rails" and continuing on page 631, to the words "scientific form of bearing," together with the cuts marked Figs. 1 to 7, thereon, both inclusive, the letter press offered in evidence reading as follows:

"The Post Bearing Plates for Rails.

The great distance between tie centers on European roads, the desire to use wood as economically as possible, and the relief of the spikes from the effects of side wear, as they are shown by Fig. 1 of

the accompanying cuts, reproduced from Glaser's Annalen, led the managers of *the* many of these roads to adopt a bearing plate for the rail. In the case of the Sommering road, connecting Vienna with the southern part of the Austrian Empire and with Italy, where ties of the section shown in Fig. 2 had been used, the obvious objections to such ties were overcome by using a rolled plate of the form shown in Fig. 3. By this plate the necessary bearing surface was obtained; the necessity of 'spotting' the tie to obtain a cant in the rail was avoided, and the side cutting of the rail into the spikes in some measure, though imperfectly, avoided. The imperfection of the latter led the management of the Brenner, when that important road was built, to adopt a bearing plate with a rib below, as shown in Fig. 4, involving, of course, a groove cut across the tie. This had, however, the disadvantages of the extra labor required on the ties of requiring special ties for curves, if the gauge was to be widened on
739 these, and of weakening the tie in its most vulnerable spot, besides giving an opportunity for the starting of decay.

In order to overcome these objections, Mr. J. W. Post, the Engineer of the Dutch State Railways, designed a form of plate with saw tooth ridges on the lower side, which were caused by the wheel pressure to cut their own grooves into the tie at any desired spot. In order to secure a better fastening for the rail to these plates and to the tie, to which the noisiness of such an arrangement as soon as it became at all loose probably largely prompted, wood screws instead of spikes were adopted, and the form represented in Fig. 5 was arrived at. In this form, in view of the greater pressure on the inner side of the rail when inclined, as shown, and also when the rail head is level and the wheel tread coned, the plates were given 2½-in. projection on the inside of the rail against 1¾ in. outside, and the inner teeth were made to project one half more than the outer ones, though not so represented on the drawing; the maximum projection of the teeth being a little more than ¼ in. The minimum thickness of the plates was ½ in., and their length in the direction of the rail axis about 5½ in. These plates were made of puddled iron, as piled iron was found liable to defects shown at *a*, Figs. 3 and 4. The groove shown in the upper surface was apparently to lighten the plate being taken out at a point where the metal was not needed. It facilitated, furthermore, a slight adjustment of the gauge, obtained by screwing down one or the other of the screws slightly in excess. The following results were observed in using these plates: It was necessary to bore the holes for the wood screws to a templet to secure a satisfactory adherence to gauge. (Note.—This seems necessary, however, in any use of wood screws.) Knots in the rail bearing are to be avoided. From 100 to 500 trains were necessary to bring the rail base to full bearing.

After 20 months' traffic, the impressions of the teeth remained sharp, and their edges in good order. The gauge and cant of the rail were better maintained than had been generally the case with the same ties without bearing plates, and the rail fastenings showed no wear, deformation nor loosening.

The slight variations in the width of the rail, leading to more or less side pressure on the screws, have led Mr. Post to modify his

design for the next lot of these plates to be laid down to the form shown in Fig. 7, and he also proposes to form grooves as shown at *a* in the same figure to reduce the amount of metal required.

740 It is hardly likely that Mr. Post's bearing plates will find much favor among our managers at present, but as preserved soft wood is introduced, and the necessity for greater economy in wood and larger bearing for the rail is felt. Mr. Post's experiments and the forms thereby obtained will form at least a starting point for a scientific form of bearing."

The said cuts being identified as Defendants' Exhibit DDD, Kate S. Holmes, Notary Public, and so marked in said volume; and further offers in evidence the reproduction on cardboard of said cuts previously identified by the witness, Charles E. Gaylord, and marked Defendants' Exhibit DDD.

Mr. Brown: Complainant's counsel objects to the illustrations or cuts, the cardboard reproduction thereof, and the text in the Railroad Gazette referred to, for the same reasons heretofore stated as objections to the introduction of similar illustrations, cuts and excerpts offered in evidence as Exhibits AA, BB, &c., during the taking of the deposition of the witness Sherman; no objection being made to the drawing DDD because it appears to be a copy, and no objection being made to the volume 19, Railroad Gazette, so far as date of publication or proof thereof is concerned.

Stipulation.

It is stipulated that if Benjamin T. Jellisson, Purchasing Agent of the Chesapeake & Ohio Railway Company were placed on the witness stand and duly sworn would testify that blue print marked Defendants' Exhibit EEE shows the standard plate used on the Chesapeake & Ohio Railroad system, May 7, 1907, and said drawing is introduced in evidence by counsel for defendants.

Mr. Brown: The exhibit is objected to as irrelevant and immaterial.

Stipulation.

It is stipulated that if E. J. Powell, Purchasing Agent for the Chicago & Eastern Illinois Railroad Company if duly sworn and examined would testify that the blue print marked Defendants' Exhibit FFF shows the standard tie plate of the Chicago & Eastern Illinois Railroad Company adopted October 19, 1906, and standard up to and on April 13, 1910.

Mr. Reed: Said blue print is marked Defendants' Exhibit FFF and offered in evidence.

Mr. Brown: Objected to as irrelevant and immaterial.

741 *Stipulation.*

It is stipulated that if A. W. Thompson, Chief Engineer of Maintenance of Way of the Baltimore & Ohio Railroad Company, were duly sworn and examined, he would testify that the blue print marked Defendants' Exhibit GGG, shows the size and dimensions of the tie plate standard on the Baltimore & Ohio Railroad, adopted September 19, 1908, and now in use, and also to the facts stated in the following letter, which is attached to said blue print:

The Baltimore and Ohio Railroad Company.

Office of Chief Engineer Maintenance of Way.

3

BALTIMORE, MD., March 28, 1910.

Mr. Frank F. Reed, 708 Rector Building, Chicago, Ill.

DEAR SIR: Referring to your request to Mr. Jackson of my office in regard to the use of tie plates on the Baltimore & Ohio R. R.

We have been using tie plates on this road in large quantities for the past ten years, but until 1908 they were used almost entirely on sharp curves, and since that time we have been using them on all curves 3 degrees and over and on soft wood ties. Will also use them for treated ties as they are put in track.

We have used a number of different designs of plates, among which were a perfectly flat plate with no shoulder; Goldie plate, Sellers plate and various designs of shoulder flange plates, including the McKee plate furnished by the Hart Steel Company; Wolhaupter, furnished by the Railroad Supply Company; Glendon plate furnished by Dilworth, Porter & Co. and Economy plate furnished by Spencer, Otis & Company.

For the last three years we have been using shoulder flange plates almost exclusively, a number of others, however, having been purchased for experimental purposes.

The shoulder flange plates are all equally acceptable for our use, we having purchased large quantities of each.

At the present time we are using approximately one to one and a half million tie plates per year.

Trusting this will furnish you with the information desired, I am,

Yours truly,

(Signed) A. W. THOMPSON,
Chief Engineer M. of W.

742 Mr. Reed: The said blue print is offered in evidence as Defendants' Exhibit GGG.

Mr. Brown: The blue print exhibit is objected to as irrelevant and immaterial.

Mr. Reed: Defendants' counsel offer in evidence the following

specification and Letters Patent and in apt time will amend the answer so as to include the same among the patents enumerated therein, Letters Patent to C. B. Sheldon, joint support for street railway rails, No. 164,776, dated June 22, 1875, and marked Defendants' Exhibit HHH.

Also Letters Patent to D. S. Whittenhall, Railroad ties, No. 185,808, patented December 26, 1866, and marked Defendants' Exhibit III.

Also Letters Patent to W. Goldie, Railway Chair or fastening No. 356,760, patented February 1, 1887, and marked Defendants' Exhibit JJJ.

Letters Patent to E. H. Ashcroft, Construction of railroads, No. 388,240, patented August 21, 1888, and marked Defendants' Exhibit KKK, together with the drawings attached to each respective specification.

Mr. Brown: The Patent Exhibits just offered in evidence are objected to as incompetent, irrelevant and immaterial, and also because not set up in the answer.

Adjourned to April 27, 1910, at 2:30 o'clock P. M.

April 27, 1910, 2:30 o'clock P. M.

Examination adjourned to April 29, 1910, at 10:30 o'clock A. M.

April 29, 1910, 10:30 o'clock A. M.

Met pursuant to adjournment.
Present: Mr. Reed and Mr. Brown.

HENRY W. CARTER recalled for further examination by Mr. Reed.

Q. 1. You have already given your testimony as an expert in this case?

A. I have, yes.

Q. 2. Have you read a paragraph or article in the Railroad Gazette, September 30, 1887, entitled "The Post Bearing Plates for Rails," and examined the cuts or illustrations in connec-
743 tion therewith previously identified as "Defendants' Exhibit DDD", and the reproduction thereof made by Charles E. Gaylord, and do you understand the description of the cuts?

A. Yes.

Q. 3. Have you examined the aluminum model of a tie plate marked Exhibit O^{24}, and also tagged model tie plate construction shown in Railroad Gazette, Vol. 19, September 30, 1887, Exhibit DDD, and compared it with said article and cuts?

A. Yes.

Q. 4. Please state whether or not said aluminum tie plate model Exhibit O^{24} correctly represents and embodies the construction shown as to the tie plate in Figs. 6 and 7 of said cuts, as explained by the said article in connection therewith, explaining any difference that may exist.

A. It does, with substantial accuracy.

Mr. Reed: Said aluminum model referred to is introduced in evidence as Defendants' Exhibit O[24].

Mr. Brown: Complainant's counsel objects to the introduction of the exhibit and to the exhibit just offered in evidence, upon the following grounds: First, because not properly or sufficiently proven and identified; secondly, because it does not constitute or represent anything shown in or belonging to the prior art; third, that it is a hypothetical structure produced for the exigencies of the defense, and it is not in itself, and does not represent anything that was ever constructed or used, or was ever intended to be constructed or used as a tie plate, at any time prior to the beginning of this suit, or since; that the model does not accurately or properly represent any of the illustrations shown in the Exhibit, Defendants' Exhibit DDD, Railroad Gazette, or in Defendants' Exhibit Gaylord Drawing reproduction thereof, and also because it is irrelevant, incompetent and immaterial.

Cross-examination by Mr. Brown:

X Q. 5. Mr. Carter, I believe you are, or at least at one time were skilled as a draughtsman, is this correct?

A. Yes.

X Q. 6. You have made Patent Office drawings, have you not, and understand the reading of drawings and sectional views, do you not?

A. Yes.

744 X Q. 7. Do I understand, from your direct examination, at this session, that Fig. 6 of the Defendants' Exhibit DDD, is a plan view of the structure shown in Fig. 7, or of the structure shown in Fig. 5?

A. Fig. 6 is, strictly speaking, a plan view of the structure shown in Fig. 5. The structure shown in Fig. 7 is slightly modified from the structure of Fig. 5, according to the text accompanying this illustration in the Railroad Gazette, and for this reason the showing of Fig. 6 is slightly inaccurate, as a plan view of the structure shown in Fig. 7. These inaccuracies, however, only exist to the extent of the slight modification between Fig. 5 and Fig. 7, and, roughly speaking, Fig. 6 still remains a substantial showing of the structure in Fig. 7, in plan view.

X Q. 8. I did not intend to ask you for any comparison of these structures, "roughly speaking," but to consider them definitely and accurately, as they are represented. With that understanding, you agree with me, do you not, that Fig. 6 is an accurate plan view of Fig. 5, and is not an accurate plan view of Fig. 7?

A. No, Fig. 6, when it comes down to accuracy, is not quite correct even as to Fig. 5. It is, however, substantially correct as a plan view of the structure shown in Fig. 5, its slight insufficiencies as an exact plan view of the structure of Fig. 5, being of no particular importance.

As to Fig. 7, Fig. 6 still remains an accurate plan view in many respects. For instance, its marginal lines indicating the extreme length and width of the plate, are correct. Also its circular lines in-

dicating the position of the bolt holes, or spike holes, are correct. Also the line indicating the left hand margin of the rail seat is correct, as well as the dotted lines indicating the ridges of the ribs on the under side of the plate for engaging the wood of the tie. Also the line extending transversely across the plate at the right hand margin of the spike holes at the right hand end of the plate is correctly placed.

In order to be exactly accurate, the lines at the left margin of the right hand spike holes should be omitted, considering Fig. 6 as a plan view of Fig. 7, since the shoulder at the right hand margin of the rail seat, indicated by this line, and present in the structure shown in Fig. 5, is omitted from the slightly modified structure shown in Fig. 7. Exact accuracy also would require that the
745 line at the left hand margin of the spike holes at the left end of the plate, as shown in Fig. 6, be moved toward the center of the plate, or to the right about an eighth of an inch.

Fig. 6 does not show the grooves *a* in the upper side or rail seat of the plate, but this is not an inaccuracy, since the structure shown in Fig. 7 does not actually illustrate these grooves, but only indicates, by dotted lines, that they may be provided, if desired.

The point of the whole matter is simply this, that while Fig. 6 is not, strictly speaking, an exact plan view of the structure shown in Fig. 7, it does so correctly represent the general plan arrangement of the structure shown in Fig. 7 that no mechanic, having before him these views of the exhibit, would have the slightest difficulty in making a physical structure substantially embodying the structure illustrated, and that this physical structure, when made, would inevitably be substantially what this aluminum model, Exhibit O[24] is. Of course the aluminum model simply shows the tie plate and does not disclose the screw spikes or the peculiarly shaped washer which is placed beneath the right hand screw spike, as Fig. 7 illustrates it.

X Q. 9. What do you understand to be disclosed by the dotted lines in Fig. 7 that are placed underneath the rail surface and adjacent to the two letters, *a a*?

A. I understand these dotted lines to be the outlines of grooves extending across the rail seat in a direction parallel with the longitudinal axis of the rail, as shown in the aluminum model Exhibit O[24]. These grooves are referred to at the end of the next to the last paragraph of the article of September 30, 1887, in the Railroad Gazette, which reads as follows:

"The slight variations in the width of the rail, leading to more or less side pressure on the screws, have led Mr. Post to modify his design for the next lot of these plates to be laid down to the form shown in Fig. 7, and he also proposes to form grooves as shown at *a* in the same figure to reduce the amount of metal required."

X Q. 10. What do you understand to be the dotted lines shown adjacent to the position of the left hand screw spike in Fig. 7 and which also bear the letter *a*?

A. I understand that to be a groove, corresponding substantially

to the groove provided in the structure shown in Fig. 5, at the
746 corresponding place in the tie plate, this groove being also proposed as a means of lightening the plate, and being equally referred to by the part of the article which I have quoted.

With reference to this similar groove in Fig. 5, the article referred to contains the following statement toward the latter part of its second paragraph:

"The groove shown in the upper surface was apparently adopted to lighten the plate, being taken out at a point where the metal was not needed."

X Q. 11. And the aluminum model, Exhibit O^{24}, does not show the groove referred to in your answer, to X Q. 10, does it?

A. No.

X Q. 12. And when you said that model Exhibit O^{24} represents and embodies the structure shown in Figs. 6 and 7 of Exhibit DDD, "with substantial accuracy," just what did you mean?

A. I meant exactly what I said,—that the aluminum model Exhibit O^{24} is a substantially accurate exemplification of the structure described in the article referred to in the Railroad Gazette as illustrated in Figs. 6 and 7. The essentials of this structure I understand to be as these views indicate, and particularly as the section indicated by the cross hatching of Fig. 7 shows, this section being modified, if desired, by the provision of the grooves indicated in dotted lines at *a*, or any of them. I do not understand that the essential construction here illustrated necessarily demands that there shall be any of these grooves, but at the same time equally contemplates that there may be such grooves in the upper surface of the plate, or any of them. As described they have no function in themselves beyond lightening the plate by omitting surplus metal, and whether employed or omitted, or employed or omitted in part, the structure still remains substantially the same.

X Q. 13. The grooves made in the upper surface of the aluminum model Exhibit O^{24} extend entirely across the plate from side margin to side margin. Do I understand you to mean by your previous answers that the dotted lines marked *a*, *a* in Fig. 7 of the Defendants' Exhibit DDD, indicate that grooves shall extend similarly from side margin to side margin of the plate shown in Fig. 7?

A. These dotted lines, in connection with the statement of the text that they are grooves, indicates to me, as a mechanic,
747 that they are intended, if provided, to extend clear across the plate. If they had been mere pockets or recesses, not extending clear across the plate from margin to margin, some such term as "pocket" or "recess," rather than the term "grooves," would have been the natural one for the mechanic to employ in describing them.

X Q. 14. If the writer of this article had intended to describe a groove or pocket extending less than the entire width of the tie plate, is it not true that the dotted lines lettered *a*, *a* in Fig. 7 would accurately indicate such a pocket or groove?

A. The terminology of the question is, in my opinion, mechanically erroneous. A pocket not extending clear across the plate would

not properly be called a groove. Such a pocket, however, to answer your real inquiry, would have been properly indicated, by the dotted lines shown in Fig. 7, but on the other hand the dotted lines shown in Fig. 7 indicate with equal propriety, actual grooves extending clear across the plate. In fact, there is no illustration known to draughtsmen by which grooves extending across the plate from margin to margin, could be indicated in Fig. 7, except by these same dotted lines, unless, of course, full lines were employed and the continuous section of the plate completely interrupted, which would not illustrate the alternative construction offered to the choice of the mechanic at present by the article and its illustrations.

X Q. 15. Please look at the two pencil sketches on the same sheet of paper which I now show to you, marked Fig. 1 and Fig. 2, and state whether or not they are, respectively, an end view and a central sectional view taken longitudinally through the center of Defendants' Exhibt O^{24}, aluminum model?

A. They are.

Mr. Brown: The Notary is requested to mark this sheet for identification as "Complainant's Cross Exhibit X."

Cross-examination closed.

HENRY W. CARTER.

Mr. Reed: Counsel for defendants produce and offer in evidence a book printed in German, styled "Das Eisenbahn-Geleise von A. Haarmann, General Direktor des Georges-Marien-Berkwerks-und Huetten-Vereins. Geschichtlicher Theil. Mit 1837 in den Text Gedruckten Holzschnitten. Erste Haelfte. Leipsic, verlag
748 von Wilhelm Engelmann. 1891." And marked on the inside first page, "E. E. Russell, Tratman, New York, 1892." Particularly the following text on page 279, in German, and the figures numbered 634 and 635 shown on page 279, said German text and figures 634 and 635 being marked Defendants' Exhibit KKK.

"Stoszunterlagsplatten mit zwei Randleisten gelangtes besonders durch die in den vierziger Jahren aufgekommene Befestigung der Schienenenden mittelst Schrauben in Aufnahme. Die Koln-Mindener Bahn fuhrte 1844 solche ein (Fig. 634)[1], und die Niederschlesisch-Markische Bahn benutzte doppelrandrige Platten mit flachen Auss paraungen in der oberen Deckenflache (Fig. 635)[2]."

And also the following German text on pages 289 and 290, of said volume, and Figs. 661 and 662 in connection therewith, the latter text and figures being marked Defendants' Exhibits LLL.

"Im Prinzip die gleiche Stitzausrustung kam auch bei breitfutzingen Schienen in Aufnahme, und zwar nicht nur in England, wo der Stotzstuhl fur solche Schienen zuerst auf der Birmingham-Glocester Bahn durch Cubitt Anwendung fand[2], sondern auch auf dem curopaischen Festlande. Namentlich war dies der Fall bei einigen deutschen Bahnen welche sich allerdings bei fruhzeitiger Annahme Breit futzschienen von der Stuhlbefestigung frei machten, dagegen dem Stotzstuhl mit Holzkeil vor den Stotzunterlagsplatten

zuweilen den Vorzug gaben[3]. Dies geshah z. B. im Jahre 1843 auf der Bahn Bonn-Koln (Fig. 661)[1], auf der Hannover-schen Staatsbahn (Fig. 662)[2], sowie inwesentlich damit uber-einstimmender Ausfuhrung beim Bau der Chemnitz-Riesaer Eisenbahn[3]."

Mr. Brown: Complainant's counsel objects to the publication offered in evidence and to the particular parts thereof specifically marked Defendants' Exhibit KKK, and Defendants' Exhibit III, for the following reasons: First, as incompetent, irrelevant and immaterial; second, as not properly proven; third, because no notice with respect to this publication or its contents is set up in Defendants' answer; fourth, because it is not shown that any of the devices referred to in the subject matter, or illustrated in the drawings of either Exhibit was ever constructed or used in any practical way or otherwise, prior to the date of the Wolhaupter patent here in suit.

749 Mr. Reed: Defendants' counsel states that he will procure from Charles E. Gaylord reproductions of the cuts or figures specified in Exhibits KKK and III, and also aluminum models of one or more of said devices.

Adjourned to May 2, 1910, at 10:30 o'clock A. M.

May 2, 1910—10:30 o'clock a. m.

Met pursuant to adjournment.
Present at before.

A. KROCH, called as a witness on behalf of defendants, being first duly sworn, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, residence and occupation?
A. My name is Adolph Kroch; 26 Monroe street; dealer in foreign books.
Q. 2. And about how long have you been in the book business?
A. For about twelve years.
Q. 3. Are you familiar with German publications?
A. Yes, sir.
Q. 4. I believe your firm makes a specialty of foreign publications?
A. Yes, sir.
Q. 5. Are you acquainted with a publisher at Leipsic named Wilhelm Englemann?
A. Yes, sir, I am; I am dealing right along with him.
Q. 6. Please look at the volume styled Das Eisenbahn-Geleise, von A. Haarmann, Leipsic, Verlag von Wilhelm Engelmann, 1891, previously introduced in evidence and the articles and cuts on pages 279 and 289 and 290, specified as Defendants' Exhibits KKK and LLL; please state whether that is a genuine publication as it purports to be?
A. Yes, sir, it is a genuine publication.
Q. 7. And what would you say as to the date of the publication, 1891, being correct?

A. There is no doubt about it that the date of publication 1891 is correct, and I can prove it.

Q. 8. Have you a catalogue of German publications in your possession?

750 A. Yes, sir, I have.

Mr. Reed: Book produced and shown witness entitled Carl Georgs's Schlagwort-Katalog, &c., Hanover, Fr. Cruses Buchlandlung-Carl Georg-A 1893.

Q. 9. Is this book last referred to a genuine catalogue?

A. Yes, sir, it is.

Q. 10. Please turn to page 256 thereof and read any reference to the book first referred to "Das Eisenbahn-Geleise, von A. Haarmann, which you may find.

A. I find "Haarmann, A. Das Eisenbahn-Geleise, 1. Bd. Geschichtlicher Tl. 2 Haelften. 4. (852 S. n. Abb.) Leipzig 91 W. Engelmann

Q. 11. Please translate and explain this quotation.

A. Haarmann, A, the railroad track, first volume, historical part, two divisions, quarto, 852 pages with illustrations. Leipsig, 1891, W. Engelmann.

Q. 12. What does the Leipsic, 1891, mean?

A. That means the place and date of publication.

Q. 13. And is this catalogue a book that you use in your business?

A. Yes, sir, I am using it right along. It is a standard catalogue.

Q. 14. And when was it published?

A. It was published in 1893.

Mr. Reed: The book, Das Eisenbahn Geleise von A. Haarmann, and the paragraphs and cuts therein referred to and identified as Defendants' Exhibits KKK and LLL, are again offered in evidence.

Mr. Brown: The objections entered upon the record to the introduction of these exhibits at the last session are here again repeated to the present introduction, as well as to the catalogue offered in evidence; and objection is made to the deposition of the witness as irrelevant, incompetent and immaterial, and cross-examination waived.

ADOLPH KROCH.

CHARLES E. GAYLORD, recalled for further examination by Mr. Reed:

Q. 1. You are the same Charles E. Gaylord who has previously testified in this case as mechanical draughtsman?

A. Yes, sir, I am.

Q. 2. Please look at the mechanical drawings styled Eisen-

751 bahn-Geleise, 1891, page- 278, 624 to 635, Defendants' Exhibit KKK, and "Eisenbahn-Geleise, 1891, page- 290, 661 and 662, Defendants' Exhibit LLL," and state whether they are correct reproductions of the figures respectively numbered 635 and 635 on page- 279, and 661 and 662, on page 290, of the book styled

"Eisenbahn-Geleise von A. Haarmann, Leipsic, 1891," previously offered in evidence?

A. Yes, sir, they are.

Q. 3. And what is the scale on which they are drawn as compared with the figures in the book?

A. The drawings are both made twice the scale of the cuts shown on the pages mentioned.

Q. 4. And are these drawings your own work, or have you made the comparison with the figures in the book?

A. One of the drawings was prepared by myself, page 279, the other drawing taken from page 290, was prepared by an assistant of mine, under my direction and supervision. That drawing was carefully compared by myself with the original cut from which it was made.

Q. 5. Are these blue prints correct reproductions of the original drawings, and also your work?

A. Yes, sir, they are.

Mr. Reed: Original drawings identified by the witness offered in evidence as Defendants' Exhibits KKK and III respectively, in the Chicago suit, and a set of blue prints in the Ohio suit.

Mr. Brown: The objections entered on the record to the illustrations in the book on page 279 and 290 respectively marked as Exhibits KKK and III, are here repeated to the cardboard drawing KKK and III, and to the blue prints thereof, but no objection is made to the cardboard drawing and the blue print thereof merely because they purport to be enlarged reproductions.

Cross-examination by Mr. Brown:

X Q. 6. Referring, Mr. Gaylord, to the drawing from page 290, figure 662, the rail chair there represented in solid black is a vertical sectional view, is it not?

A. Yes, sir, it is.

X Q. 7. And the two parallel vertical lines adjacent to the right hand spike indicate not only the spike holes but that the
752 section is taken in a vertical plane through that right hand spike hole, do they not?

A. That is the only conclusion which could be drawn from the illustration 662.

X Q. 8. On the left hand side of that same figure 662, is shown the outline, in dotted line of a spike with the head of the spike in full line; what do you understand the dotted line to indicate with respect to the location of that spike relative to the location of the other, or right hand spike that is shown in full lines?

A. It is to be inferred from the illustration that the two spikes are not in the same transverse line but bear a staggered relation to each other.

X Q. 9. So that this left hand spike would be located in a vertical plane other than the vertical plane in which the right hand spike is shown, and through which the sectional view is taken, would it not?

A. Yes, sir, it would.

X Q. 10. Please look at the two sets of vertical parallel dotted lines shown in figure 661 of the same drawing; what do they represent?

A. I should say that they represent spike holes through this chair.

X Q. 11. And what do the two horizontal dotted lines, near the bottom of that plate, terminating in a curved portion, represent?

A. These dotted lines would seem to indicate depressions in the under side of the chair shown in 661.

X Q. 12. This figure 661 is apparently an end elevation of the rail chair, is it not?

A. Yes, sir, it is. That is to say, it is an elevation but rather of the side of the chair than the end thereof.

X Q. 13. If the depressions indicated by the dotted lines referred to extend all the way across the plate from side to side they would have been shown in full lines instead of dotted lines, would they not?

A. Yes, sir, they would, if the figure was correctly drawn.

X Q. 14. And assuming this to be correctly drawn in this book, these doted lines mean to you depressions that do not extend from side to side; do I understand you correctly?

A. Yes, sir.

X Q. 15. And what do the curved dotted lines indicate?

A. They indicate the outer contour of the body portion
753 of the plate extending centrally between lateral flanges thereof.

X Q. 16. Will you please mark a letter of reference, *a*, to indicate the two sets of dotted lines which you have been speaking about, and which mean or indicate depressions on the under side of this chair?

A. Yes, sir.

Redirect examination by Mr. Reed:

R. D. Q. 17. Do the white spaces below the rail base in figures 661 and 662 of defendants' Exhibits LLL and below the rail base in figure 635 of Defendants' Exhibit KKK, indicate grooves extending clear across the plate from side to side?

A. Yes, sir, they do.

CHAS. E. GAYLORD.

Mr. Reed: Defendants' counsel offers in evidence an aluminum tie plate model purporting to embody the construction shown in figure 635 of Defendants' Exhibit KKK, the same being marked Defendants' Exhibit O^{25}, and endorsed model of tie plate showing construction page 279, Das Eisenbahn-Geleise, Fig. 365, Defendants' Exhibit KKK.

Mr. Brown: The exhibit is objected to as irrelevant, incompetent and immaterial and as not properly proven, and for the same reason as stated to the introduction of Exhibit KKK.

Mr. Reed: Defendants also produce and offers in evidence alumi-

num model tie plate showing construction of Fig. 661, page 290, of Das Eisenbahn-Geleise and it is marked Defendants' Exhibit O^{26}.

Mr. Brown: Same objection, and also for the same reason as stated to the introduction of the Exhibit LLL.

Mr. Reed: Defendants' counsel also produces and offers in evidence aluminum tie plate model showing construction of figure 662, page 290, in Das Eisenbahn-Geleise, Defendants' Exhibit III, and the same is marked Defendants' Exhibit O^{27}, and endorsed "Model showing construction of Fig. 662, page 290, Das Eisenbahn-Geleise, Defendants' Exhibit III."

754 Mr. Brown: Objected to as incompetent, irrelevant and immaterial, also for the same reasons stated to the introduction to Defendants' Exhibit III.

Complainant's counsel further objects to the last two models and to the drawings and text in Defendants' Exhibits III, because purporting to illustrate a rail chair and not a tie plate.

Complainant's counsel inquires of defendants' counsel whether or not the contracts and associated data and instruments inquired of on the cross-examination of defendants' witness Willis McKee, and respecting which request was made that the same be produced, have been or will be produced?

Mr. Reed: Defendants' counsel replies that in the opinion of counsel the request for said alleged contract and the contract itself, were not germane to the cross-examination of the witness McKee, or material in the case, and therefore declines to produce the same unless ordered by the court.

Defendants' proof is closed, with the exception of testimony relating to the use on the Boston & Maine Railroad, of Goldie plates which was for the first time discovered during the past week and the names of the witnesses and their exact testimony ascertained on Saturday, April 21, for the first time, and which has not in all its details yet been submitted to the present counsel. If, upon examination thereof counsel deems the same pertinent, material and important, application will be made to the court for an extension of time in order to take the same, of which application of course, due notice will be given.

755 & 756 United States of America, Northern District of Illinois.

STATE OF ILLINOIS,
County of Cook, ss:

I, Kate S. Holmes, do hereby certify that I am a Notary Public in and for the County of Cook and State of Illinois, and by the laws of the State of Illinois authorized to administer oaths and take the depositions of witnesses; that the above and foregoing depositions were taken before me, as such Notary Public, on behalf of the defendants in the case now pending in the United States Circuit Court for the Eastern Division of the Northern District of Illinois, wherein the Railroad Supply Company is complainant and the Hart Steel Company and Guilford S. Wood are defendants, at the times and places, and in the manner above noted down; that first, and before

the commencement of any examination, each witness was by me duly cautioned, examined and sworn, as by statute provided; that the evidence of each of the witnesses was thereupon taken down by me upon the typewriting machine in the presence of said witnesses and of said counsel, as noted, and afterwards the evidence of each of said witnesses was by said witness read over in my presence and in my presence subscribed by said witness; that counsel for the respective parties attended on the taking of said depositions, as noted; that various stipulations and objections, as noted, were taken, made and entered *into* by me; that various exhibits referred to in said depositions and evidence were produced and by me marked and identified, as noted in said depositions, and delivered to the counsel for the defendants for custody and safe keeping; that I am wholly disinterested in the event of said suit, and not of counsel, or related to any party therein.

In Testimony Whereof, I have hereunto set my hand and Notarial Seal this 1st day of June, A. D. 1910.

[NOTARIAL SEAL.] KATE S. HOLMES,
Notary Public.

In the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois.

In Equity. No. 29294.

RAILROAD SUPPLY COMPANY
vs.
THE HART STEEL COMPANY and C. S. WOOD.

Depositions taken before H. D. Gamble, Esq., Clerk of the U. S. Circuit Court for the Western District of Pennsylvania, on behalf of the defendants in the above entitled suit, upon oral interrogatories, commencing on Friday, the 25th day of February, A. D. 1910, at the hour of eleven o'clock A. M., under and pursuant to the annexed notice.

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Appearance: For Complainant, Taylor E. Brown, of Counsel for Complainant, and James Negley Cooke and Frank F. Reed, of Counsel for Defendants.

LEONARD ZIMMERMAN, a witness of lawful age, having been first and before the commencement of any examination, *having been first duly* sworn and cautioned as by statute provided, testified as follows:

Direct examination by Frank F. Reed, of counsel for defendants:

Q. 1. Please state your name, age, residence and occupation?
A. Leonard Zimmermann; 48; Hazelwood, Pittsburgh, occupation, steamfitter.

Q. 2. Were you ever in the employ of Dilworth, Porter & Company?

A. Yes, sir.

Q. 3. Please state in what capacity you were employed?

A. Why, steamfitter when I first went there, in 1890. Then I was taken in the tie plate department, after they started in making tie plates.

Q. 4. About when did you go into the tie plate department, and how long did you continue therein?

A. In the tie plate department about a year and a half.

Q. 5. And about what date were you in the tie plate department?

A. Well, I couldn't just state what date. Most every day in the week.

Q. 6. I mean what year?

A. 1892.

Q. 7. And about how long were you in the tie plate department?

A. About 18 months altogether, I suppose.

Q. 8. And after you left the tie plate department, did you continue in the employ of Dilworth, Porter & Company?

A. No, sir, I went to work at my trade of steam fitting.

Q. 9. Is there any circumstance by which you are enabled to fix the date of your employment in the tie plate department? If so, please state what it was?

758 A. No, I am not able to state the date I started there.

Q. 10. I mean was there anything that occurred or anything that you did while you were in the tie plate department that enables you to state about the time you were so employed?

A. No, sir.

Q. 11. Do you remember at any time of going to the World's Fair at Chicago, with anybody connected with Dilworth, Porter & Company?

A. Yes, sir; September 11, 1893.

Q. 12. With whom did you go?

A. My wife and brother.

Q. 13. Now, was this visit to the World's Fair while you were employed in the tie plate department of Dilworth, Porter & Company?

A. Yes, sir.

Q. 14. Can you remember about how long you had been in the tie plate department before you went to the World's Fair?

A. I judge about a year.

Q. 15. What did you do while you were in the tie plate department of Dilworth, Porter & Company?

A. I was supposed to be foreman of the shear knives and punches, and also shear plates and punch plates.

Q. 16. How were the tie plates brought to you; I mean in what shape?

A. They were in long bars; about 20 to 25 feet long.

Q. 17. And what did your Department do with these bars?

A. Sheared them in right length, whatever the order called for; punched them for different size rails, the web of the rail.

Q. 18. Was this done under your supervision?

A. Yes, sir.

Q. 19. And did you, yourself, at any time, actually shear and punch the plates?

A. Sheared the first plates, and punched the first plates that were ever rolled in Dilworth-Porter's mill.

Q. 20. Please describe the tie plates that were rolled, sheared and punched, while you were in the shearing department at Dilworth, Porter & Company's mill?

A. The plates had two ribs in the bottom; one shoulder on top and concave; some plates we punched three holes, in some plates two holes; according to how the railroad company ordered them.

759 Q. 21. Where was the concavity or concave place of which you speak?

A. On top of the plate.

Q. 22. About how large were the plates?

A. They were 6″ wide and then we sheared some up 5″ wide.

Q. 23. And about how long were they, or what was the other dimension?

A. About 8″.

Q. 24. And how did the ribs on the bottom run?

A. Run crossways of the tie.

Q. 25. Was there any other kind of a tie plate rolled, sheared and punched there while you were in this department?

A. Yes, sir, claw plate.

Q. 26. Please describe this so-called claw plate.

A. The claw plate had a piece of steel about an inch wide at each corner; about ¾″ long, pointed.

Q. 27. Please describe the top.

A. The top was just about the same as the tie plate, ribbed plate, concave.

Q. 28. And did or did it not have a shoulder?

A. Had a shoulder also.

Q. 29. What did you in your department do with reference to the so-called claw plates? Tell everything you did.

A. The plate was rolled out solid; then we had to shear a piece out to get the claw in; then we pointed them afterwards.

Q. 30. In what way or direction did the claws you speak of at the corners point or extend?

A. Why, it pointed to the tie and crossways of the tie, just the same as the rib.

Q. 31. Please look at the tie plate tagged "Defendant's Exhibit C, Kate S. Holmes, Notary Public, U. S. Circt. Dist. Ills. Eastern Div. Railroad Supply Steel Co. v. Hart Steel Co. and G. S. Wood, U. S. Cir. Ct. N. Dist. Ohio, Eastern Div. Railroad Supply Co. vs. Elyria Iron & Steel Co.," and state if you can, how this compares with the tie plates which were rolled, sheared and punched by the different departments at Dilworth, Porter & Co., and which you have spoken of as having ribs on the bottom.

A. That plate is the very thing that when I was punching them and shearing them.

760 Q. 32. What is your opinion as to that plate being one that came out of the Dilworth, Porter & Company mill?

A. It is the impression of the plate, but I couldn't swear whether it is the plate or not.

Q. 33. Well, is there any difference, so far as you can tell between this plate and the ribbed plates rolled, sheared and punched during the period that you were in that department?

A. No, sir; it is the very same plate.

Q. 34. What were these plates that had ribs on the bottom, and were produced at the mill, while you were in this department, called, if they had any name?

A. They called it the ribbed cushion plate?

Q. 35. Who called it by that name?

A. Mr. Goldie.

Q. 36. What is the fact as to these ribbed and claw plates being rolled, sheared and punched at the Dilworth, Porter & Company mill during these 18 months that you were in the shearing department; I mean were they made continuously?

A. Not when they first started.

Q. 37. For about how long were they rolled continuously?

A. Well, after they started the first one, I guess it was a month or so, before they started making them continuously then. I had about 10 men working for me at the time when I left.

Q. 38. And were these plates, the ribbed and claw, of this pattern, made continuously after about a month from the first rolled, until you left?

A. Yes, sir.

Q. 39. Could you give us any idea of the quantities or numbers, or did you keep no record of that?

A. There was one day there I think I turned out fifteen or twenty thousand; that is the ribbed plate, sheared and punched them.

Q. 40. Which did you make the most of, the ribbed or claw plates?

A. The ribbed plate we made the most all the time I was there, but in the meantime the claw plate was coming in more than the ribbed, towards the last.

Q. 41. When you left was the mill still producing plates of both kinds?

A. Yes, sir.

761 Q. 42. What was done with the plates that were sheared, and punched in your department; what was the last that you saw of them?

A. We put ten in a bundle and wired them up and then shipped. Every plate was counted; there were 10 in each bundle.

Q. 43. And where were these plates when you would last see them?

A. In the small shop I had in Dilworth, Porter's yard, at the weigh scales.

Q. 44. And to what department, if any, did you turn them over?

A. Tie plate department, we called it.

Q. 45. Did you ever see any of these tie plates which you have

been talking about, after they had been placed in railroad cars, at the mill?

A. Yes, sir, I saw them at the Pennsylvania Railroad track at Liberty street, the track crossing Liberty street to the Union Depot.

Q. 46. You did not understand my question. I mean did you ever see any of these plates placed in railroad cars or after they have been placed in railroad cars at the mill, for shipment?

A. No, sir, I did not.

Q. 47. You simply turned them over to the scale or weighing department or saw them near the scales?

A. Yes, sir.

Q. 48. Now, you stated that you saw some of these plates at the Pennsylvania Railroad track at the crossing of Liberty street at the Union Depot?

A. Yes, sir.

Q. 49. About when was that, if you recall?

A. I think it was 1892, or 1893, it may have been.

Q. 50. Was it while you were still in the shearing department of Dilworth, Porter & Co.?

A. Yes, sir.

Q. 51. How did you happen to see them there?

A. We were walking along there, my wife and I, we were going up to her folks at Kittanning, and I happened to see a pile there.

Q. 52. What kind of tie plates were these, ribbed or claw?

A. Ribbed plates.

Q. 53. And could you give us any idea of the number?

762 A. Why by the size of the pile, I thought there was about a thousand or two.

Q. 54. And where were they lying?

A. They were lying on that curb right at the Adams Express place; that's the old track; that track is not there now. There was a little park there, and they were laying right beside it.

Q. 55. Were they new plates or old ones, if you noticed?

A. They were new plates.

Q. 56. Did you ever see these plates that you have just mentioned near Liberty Street, again?

A. Yes, sir, I saw them after I left Dilworth and Porter's there; walked down that track and seen them in use from Liberty street to Penn avenue.

Q. 57. Where were they; installed in the track?

A. They were in use, under the rail.

Q. 58. Did you ever engage or assist in any tests of these tie plates that we have been describing, made at the Dilworth, Porter & Company mill, while you were in the shearing department?

A. Yes, sir. Mr. Goldie and I made tests; the Pittsburgh Laboratory and also the A. French Spring Company.

Q. 59. What style or kind of plates were tested; ribbed or claw?

A. Rib and claw both.

Q. 60. And did the plates so tested all have this cavity on the top?

A. Yes, sir.

Q. 61. Please describe the tests and results, as nearly as you can.

A. The tests that Mr. Goldie and myself made and the man at the laboratory were made in different shapes and form. Mr. Goldie said that that was fine.

Q. 62. I wish you would tell just what applications or tests you made to the different parts of the tie plates, and what the results were.

A. The first test he made was to see how much pressure it would take to press that rib into the tie. The next test he tried to make was to see how much pressure it would take to push it away from the tie, so as to spread the rails. The next test he made was to see how much it would take to bend the plate.

Q. 63. Were similar tests made with the claw plates in reference to the claws being pressed into the ties?

763 A. Yes, sir, we took one over there; probably two of them; we tried them to see how the claw would tear the wood, the tie.

Q. 64. I suppose you personally did not make or keep any memoranda showing the pressure or force employed?

A. No, sir.

Q. 65. What was the result of the tests in reference to bending the plate?

A. Mr. Goldie said it was a good plate.

Objected to as hearsay.

Q. 66. Did the test succeed in bending the plate in the middle, or did it resist successfully, the pressure applied?

A. Mr. Goldie said it done well.

Same objection.

Q. 67. Please state only what you saw and did there or what actually took place, and please tell us whether there was enough power or pressure applied to the plate at this test so that it bent in the middle?

A. The plate—my experience of it, done pretty good from what I thought it was.

Q. 68. About what time were these tests made, with reference to your employment in this department; at the first, or towards the last?

A. Mr. Goldie and I used to leave Dilworth & Porter's mill about nine o'clock for the Pittsburgh Laboratory Company, Water St., and stay there until about noon; some days we would go over there after noon. We made several trips over there, probably about 6 or 8; and one trip to the A. French Spring Company.

Q. 69. And were these tests and trips soon after you began to roll and shear the plates, or some time after or were they at various times during the 18 months?

A. Right after they started to roll the plate.

Q. 70. How did you regard the test? As satisfactory or unsatisfactory?

A. What I seen of the tests, I thought the plate done well.

Q. 71. What kind of power was used in these tests, if you know?

A. Hydraulic.

Q. 72. And at the spring works, did you use the power and appliances that were there designed and used for testing their springs?

A. Yes, sir, it was hydraulic.

764 Q. 73. Well, was the power that was actually used in these tests, strong, heavy power?

Objected to as hearsay.

A. Yes, sir, they were awful strong.

Q. 74. Look at the aluminum model tie plate tagged "Defendant's Exhibit O-10, Kate S. Holmes, Notary Public," with the titles of the two causes on the reverse, and also tagged, "Prior Art Devices of Goldie, Patent 485,030, dated Oct. 25, 1892," and state, if you can, whether this aluminum model represents the form of the tie plates produced at Dilworth, Porter & Company mills and sheared and punched by your department, and referred to you as ribbed or cushion ribbed tie plates?

A. Yes, sir, it is the very same plate.

Q. 75. Please look at the drawings, Figs. 2 and 3, of the specifications of the Letters Patent No. 540,356, W. Goldie, Tie Plate patented June 4, 1895, and state, having in mind especially Fig. 2, how the tie plates rolled, sheared and punched while you were in the shearing department of Dilworth, Porter & Co., and described by you as claw plates, compared with these figures?

A. The plates just looks the same as I punched and sheared as on the diagram.

Q. 76. And the claw plates that were tested by you at these tests, were they the same or similar?

A. They were the same.

Q. 77. Calling your attention to the cavity or shallow groove running parallel with the shoulder in Fig. 2, and marked with *bbb*, I will ask you whether there was a similar cavity in the so-called claw plates that were rolled, sheared and punched while you were at Dilworth, Porter & Company's mill.

A. I think they were; I am sure they were.

Q. 78. You remember who had charge of the rolling department of the Dilworth, Porter & Company mill, and supervised or directed the rolling of these tie plates that were made while you were in the shearing department?

A. Mr. Albert Dabis.

Q. 79. I wish you would tell us about the number of spike holes that were punched in the tie plates that were rolled and punched in your department there.

A. There was one road got a good many of them with four holes in; I think it was the Santa Fe road. Then after that there

765 were more of them just two holes opposite one another.

Q. 80. And were there any tie plates punched with three holes for spikes?

A. Yes, sir; one on the shoulder and two at the opposite.

Q. 81. What is the fact about the number of spike holes in the so-called claw plates that were made?

A. They were mostly all punched three holes; one on the shoulder and two at the opposite end.

Q. 82. Have you any interest in this lawsuit in any way?

A. No, sir.

Q. 83. Were you subpœnaed to give your testimony?

A. Yes, sir.

Q. 84. I understood you to say that when you ceased your connection with the shearing and punching department of Dilworth, Porter & Co., you left the employ of that firm or company entirely?

A. Yes, sir, I went to work at my trade.

Q. 85. You have referred to Mr. Goldie, in connection with the tests. Do you remember his first name?

A. No, sir.

Q. 86. What had he to do with these plates?

A. It was in his patent, he said.

Cross-examination by Mr. Brown:

X Q. 87. In what year, Mr. Zimmermann, did you leave the employ of Dilworth, Porter & Co., and return to your trade?

A. I think it was in 1895; either '95 or '96.

X Q. 88. Do you remember whether all the Goldie claw plates that were rolled at the time you have been testifying about, had the depression in the top, or were some of them flat top claw plates?

A. The ones I tested or helped to test had the concave on top.

X Q. 89. And do you remember whether during any of the time that you were working for Dilworth, Porter & Company, the claw plates were rolled with the shoulder and a flat top?

A. I think the first was. I ain't positive of that. There were some changes made afterwards.

766 X Q. 90. Were the claw plates and the ribbed plates about the same thickness?

A. Yes, sir. No, the claw plate was a little heavier.

X Q. 91. Do you remember what thickness the plates were?

A. I think in the neighborhood of about 3/8 of an inch.

X Q. 92. This aluminum model that has been shown to you, marked Exhibit O-10, is 5/16″ thick. Would you say that this was thinner than the ribbed plates that were rolled?

A. No, sir. The only place I see it is thinner, is at the ends. There is more of a taper at the ends than there is to that aluminum plate; otherwise the plate is just that very thing.

X Q. 93. Well now this aluminum model is 5/16″ thick at both ends, and also through the concave and convex part in the middle, is it not?

A. Yes, sir.

X Q. 94. And did you mean by your last preceding answer that the ribbed plates that were rolled, were the same thickness as this aluminum plate at their middle concave portion, but that the rolled plates tapered a little at the ends, and were a little thinner than this aluminum plate at their ends? Is that what you meant?

A. Yes, sir.

X Q. 95. You mentioned having made or turned out quite a quantity of the ribbed plates on one particular day. About how many of the claw plates do you recall turning out on any one day?

A. I never kept track of turning out claw plates. It took more handling of them than it did the ribbed plate. It was slower work.

X Q. 96. Were there more operations required in making a claw plate than in making a ribbed plate?

A. Yes, sir, there were; just about as much again time lost.

X Q. 97. That is to say, if I understand you correctly, you and your force of men could turn out about twice as many ribbed plates in any given time as you could turn out claw plates?

A. Yes, sir.

X Q. 98. Well, that would naturally, I presume, make the claw plates the more expensive plates, would it?

Objected to as not proper cross-examination.

A. I would think it would.

767 X Q. 99. Were not the claw plates and the ribbed plates about the same weight net?

A. No, sir.

X. Q. 100. Which was the heavier plate of the two?

A. The claw plate.

X Q. 101. Was it very much heavier, do you remember?

A. I wouldn't think it was, no.

X Q. 102. Which plate was rolled first in your mill, during your time, the claw plate or the ribbed plate?

A. Ribbed plate.

X Q. 103. About what year was it, as near as you can remember, when the first claw plates were turned out?

A. I would think it was in 1892; somewheres in that neighborhood; it might have been the latter part of it, and the first part of 1893.

X Q. 104. And the first ribbed plates were turned out in 1892, were they not?

A. I think so.

X Q. 105. Did I understand you correctly to say that during the latter part of your term with the Dilworth, Porter Company, they did not make as many of the ribbed plates as they did of the claw plates?

A. No, the claw plates—we turned out quite a number of the claw plates the last part of the time I was there.

X Q. 106. Well, during say the last two or three months of your employment, which plate did they make the most of, the claw or the ribbed?

A. Ribbed plate.

X Q. 107. You were asked by Mr. Reed which plates you made the most of (Q. 40), and you answered:

"The ribbed plate we made most all the time I was there, but in the meantime the claw plate was coming in more than the ribbed, toward the last."

Please explain a little more fully just what you meant by that answer.

A. Why, I would suggest that they were getting better service out of the claw plate than the ribbed plate.

X Q. 108. And as you understood it, the claw plate was coming into use more and more, and therefore, you were rolling more and more of them, as time went on. Is that it?

A. Yes, sir.

X Q. 109. At the time you left Dilworth, Porter & Company, about what proportion of the plates that were being rolled
768 were claw plates, and what proportion were ribbed plates?

A. I guess they were both about the same amount when I was leaving. I didn't keep much track of that.

X Q. 110. But for some time prior to your leaving, you had noticed that the claw plates were coming in more and more and larger quantities were being rolled, had you?

A. Yes, sir.

X Q. 111. Who conducted the laboratory tests that you have referred to?

A. Mr. Goldie and I and the gentleman that run the laboratory.

X Q. 112. What part of the work did you do yourself in those tests?

A. I moved the plates and blocks in different shapes and forms.

X Q. 113. This metal tie plate that you have identified and which is marked Defendants' Exhibit C, has evidently been in use in track, has it not?

A. Yes, sir.

X Q. 114. And in looking at it now, would you not say that the service that this plate has been put to, has had the effect of almost completely straightening out the original bend in the center of the plate?

A. Yes, sir, and it wore also on top.

X Q. 115. Where are you employed now, Mr. Zimmermann?

A. Snively Plumbing Company, Pittsburgh.

Redirect examination by Mr. Reed:

R. D. Q. 116. When you left the employment of Dilworth, Porter & Company, were both the ribbed and claw plates that were being rolled, made with this cavity on the top?

A. Yes, sir.

LEONARD ZIMMERMAN.

Adjourned to meet at ten o'clock Saturday morning, February 26, 1910.

769 Evidence resumed Saturday morning, February 26, 1910, pursuant to adjournment.

Present: Counsel as before.

R. EVANS, a witness of lawful age, being first and before the commencement of any examination, being duly sworn as by statute provided, testified as follows:

Direct examination by Mr. Reed:

Q. 1. Please state your name, age, residence and occupation.
A. R. Evans; 64 years old; Wilkinsburg, Pa.; occupation, retired.
Q. 2. Were you at any time in the employ of the Pittsburgh & Lake Erie Railroad Company?
A. I was.
Q. 3. When and in what capacity did you become an employe of that road?
A. On the first day of March, 1880.
Q. 4. State the capacity; what you were at first.
A. Voucher clerk.
Q. 5. And then in what capacity?
A. Private Secretary to the General Manager and President for seven years.
Q. 6. When, if ever, did you become purchasing agent of the road?
A. About 1887.
Q. 7. And how long did you remain purchasing agent?
A. Until the first of November, one year ago.
Q. 8. While you were purchasing agent, did the road begin the use of what is known as tie plates?
A. It did.
Q. 9. What was the date that tie plates were first used on the road?
A. Some time during the year 1892.
Q. 10. Who recommended the tie plates that were used?
A. Our Chief Engineer, Mr. Atwood. I would like to correct that —our engineering department.
Q. 11. From whom were they purchased?
A. Dilworth, Porter & Company.
770 Q. 12. Please describe these tie plates that were first used, if you can?
A. As near as I can recollect, the samples submitted to my office were a plate with a depression in the center, with the reinforcement for rail, with a ridge or I don't know what you would call it, running across the tie plate.
Q. 13. You mean on the bottom?
A. I mean on the bottom; there were two.
Q. 14. And the depression and the reinforcement were on the top of the plate?
A. On the top of the plate.
Q. 15. Look at the drawing attached to the specification of Letters Patent W. Goldie tie plate 485,030, Oct. 25, 1892, and after examining the plate there shown, especially as it appears in Fig. 1, state how it compares with the tie plate submitted and adopted.
A. As near as I can tell, this is the first tie plate we used on the Lake Erie.

(Witness points to Fig. 1.)

Q. 16. Look at the model in aluminum, marked "Defendant's Exhibit 10, Kate S. Holmes, Notary Public" in this litigation, and state how that compares with the tie plate adopted.

A. As near as I can recall, this is almost the tie plate that we first ordered.

Q. 17. Mr. Evans, please look at the tie plate marked "Defendant's Exhibit C, Kate S. Holmes, Notary Public," in this litigation, and state how that tie plate compares with the ones that were submitted as you have described.

A. Why, it is almost exactly the same, excepting I cannot recall in regard to the number of spike holes.

Q. 18. Do you recall of making any special examination of these tie plates which were submitted, or measurements of them in your office? If so, state. I mean especially in reference to the depression on the top.

A. Yes, I remember distinctly of that, of making an examination of the tie plate from Dilworth, Porter & Company.

Q. 19. What did you do, if you recall, in making this examination?

A. I remember of looking over the plate, of taking the measurement, and especially putting my rule over the depression, over the top of the plate.

Q. 20. Please state whether at any time the form of the plate that was furnished, was changed. If so, in what way?

771 A. I can only recall that in a very short time the plate was changed where there was a claw on the outer edge of it, that went down into the tie cross plate.

Q. 21. Look at the drawings attached to patent specification, W. Goldie, Tie Plate, 540,356, June 4, 1895, and state how Fig. 2 compares with the plate having claws which you have just referred to.

A. That is the plate that I refer to.

Q. 22. Did it have a depression on top?

A. It did.

Q. 23. Did the Pittsburgh & Lake Erie Road use tie plates such as you have described, in any quantity?

A. They never used them, so far as I can recollect, until they were submitted by the Engineering Department in 1892.

Q. 24. Now, please tell us after these plates had been submitted, what the fact is as to whether they were purchased and used on the road?

A. They were.

Q. 25. And could you give us any idea as to the amounts or numbers?

A. No, I cannot, but they were not purchased in large quantities.

Q. 26. Well, could you give us any idea of the numbers that were used?

A. No, I cannot.

Q. 27. Were the purchases made through your office?

A. They were.

Q. 28. And from what concern were all tie plates of these two kinds that you have described, purchased.

A. Dilworth, Porter & Company.

Q. 29. And for about how long did you continue to purchase them, I mean plates of this style, with the depression in the top?

A. I never purchased any tie plates except from Dilworth, Porter & Company, as far as I can recall.

Q. 30. Well, do you remember how long you did continue to buy these kind of plates from Dilworth, Porter & Company?

A. So far as I can recollect, we never purchased any great quantity of the tie plates with the depression.

Q. 31. Did you continue to purchase them for a year or two?

772 A. Yes, I presume we did.

Q. 32. Did you ever see any tie plates of this description, in the tracks of the Pittsburgh & Lake Erie Road?

A. I did. I saw them when they were in use.

Q. 33. Do you remember where you saw them in the tracks of the road?

A. No, I can't recall the place.

Q. 34. When was it you saw them in the tracks, or about when, with reference to the purchase?

A. Well, after 1892, within a year or two years.

Q. 35. Have you any interest in this suit?

A. None whatever.

Q. 36. Were you subpœnaed to come and give your deposition?

A. I was unfortunately.

Cross-examination by Mr. Brown:

X Q. 37. Are you quite positive that the tie plates which had the four claws on their under surface, also had the depression in the top surface, such as was present in the plates which had the ribs on the under surface?

A. No, I am not as positive of that as I am of the first that we had with the rib, excepting, as near as I can recall, tie plates which had been taken out of the track, had the depression; that is as near as I can recall.

X Q. 38. I do not doubt that you are correct in your recollection as to tie plates substantially like the model in front of you, having had the depression in the upper surface, but I am speaking now, and direct your attention only to the plates shown in the last Goldie patent submitted to you, No. 540,356. Are you quite certain that plates having the under claws, one at each corner, as shown in this patent, had their top surface with a depression as shown in Fig. 2, or had their top surface perfectly flat as shown in Fig. 1.

A. I am not as certain in regard to the depression of the claw plate, as I am of the first plate, that we used, but my recollection is that it was identical, excepting it had the claws, instead of the ribs, although I did not, as near as can recall, give it the same consideration as I did on our first tie plate.

X Q. 39. Then the claw plates were used later than the ribbed plates, were they?

A. Yes.

X Q. 40. And did you, during the period you have men-
773 tioned, ever purchase and did your Road ever use any claw plates that had a flat surface?

A. Not that I can recall.

X Q. 41. Before giving your deposition here this morning, just when and where did you see the aluminum model which you have identified, marked Defendant's Exhibit O-10, and the tie plate marked "Defendant's Exhibit C"?

A. Well, within one hour. I saw it in Mr. Cooke's office.

X Q. 42. So far as you know, did any of the Goldie tie plates which you have testified concerning, after being in use in track, break at the shoulder?

A. No, sir.

X Q. 43. Do you know why you discontinued the purchase and your Road discontinued the purchase of tie plates like this "Defendant's Exhibit C"; that is, the ribbed plate?

A. I was guided entirely by the authority and the suggestion of our Chief Engineer, and it was discontinued on his suggestion.

X Q. 44. And do you happen to know why the Chief Engineer gave you that suggestion?

A. I cannot tell.

R. EVANS.

UNITED STATES OF AMERICA,
Western District of Pennsylvania, ss:

I, H. D. Gamble, do hereby certify that I am the Clerk of the United States Circuit Court for the Western District of Pennsylvania; that the depositions of the above and foregoing witnesses were taken on behalf of the defendants in the suit now pending in the United States Circuit Court for the Eastern Division of the Northern District of Illinois, wherein the Railroad Supply Company is complainant and the Hart Steel Company and G. S. Wood are defendants, under and pursuant to the foregoing notice; that first and before the commencement of any examination each of said witnesses was by me duly examined, cautioned and sworn as by statutes required and provided that each of said witnesses resides in Allegheny County, State of Pennsylvania, more than one hundred (100) miles from the place of trial of said suit; that after the administration of the oath to each witness respectively the testimony of said witness as above written down was taken down in my presence upon the typewriter by Adah M. Mann, a competent and disinterested
774 person, and after the testimony of each witness as above written down was so taken down it was by said witness read over and by said witness in my presence subscribed and sworn to; that the attendance on behalf of the respective parties to said suit were as above noted; that the specifications and drawings of letters patent and the tie plate model and exhibit referred to in depositions of the witnesses were actually exhibited to said witnesses respectively as shown in the depositions; that I am disinterested in the event of said suit, and not of counsel for or related to any party of said suit; that after taking all said depositions and the signatures thereto, the

same were kept and retained in my custody until the same were sealed up, directed to the court and deposited in the United States mail; that the said depositions were taken at the place and times noted therein and in accordance with the aforesaid notice.

In testimony whereof, I have hereunto set my hand and the seal of said court, this 1st day of March, 1910.

[SEAL.] H. D. GAMBLE,
Clerk of the United States Circuit Court for the Western District of Pennsylvania.

Examiner's Fees:

65 Fols. at 20 cts.	13.00
Certfs.	.70
Postage	.12
	$13.82

(Endorsed:) Filed March 28, 1910. H. S. Stoddard, Clerk.

Depositions of sundry witnesses taken before H. D. Gamble, Clerk of the United States Circuit Court for the Western District of Pennsylvania, in the suit now pending in the United States Circuit Court for the Eastern Division of the Northern District of Illinois, wherein the Railroad Supply Company is complainant and the Hart Steel Company and G. S. Wood are defendants, commencing on Tuesday, the 5th day of April A. D. 1910, and on behalf of the defendants, upon oral interrogatories by consent and agreement of parties. The depositions were begun at the hour of eleven o'clock forenoon, at the office of said Clerk and there attended on behalf of complainant, Taylor E. Brown, counsel for complainant, and on behalf of the defendants, James N. Cooke and Frank F. Reed, of counsel for defendants.

775 JOHN AMBLER, a witness of lawful age, having been first duly sworn, cautioned and examined, testified as follows:

Direct examination by Frank F. Reed, of counsel for complainant:

Q. 1. Please state your name, residence and occupation.

A. John Ambler, Youngstown, Ohio; roll turner.

Q. 2. Were you ever in the employ of Dilworth, Porter & Co. of Pittsburgh?

A. Yes, sir.

Q. 3. In what capacity?

A. I had charge of the roll turning.

Q. 4. Please describe a little more fully just what you did.

A. The rolls were brought to the mill from the foundry in a rough state and by me and my assistants placed on the lathe, and turned to the required shape to make such material as was desired.

Q. 5. How long and during what period were you in the employ of Dilworth, Porter Company as roll turner?

A. From April, 1889, until during the summer of 1896 or 1897, I am not sure which.

Q. 6. At any time during that period did Dilworth, Porter & Co. make tie plates?

A. They did.

Q. 7. And did you turn the rolls for these tie plates?

A. They were turned by me and my assistants.

Q. 8. Please state when for the first time any tie plates were rolled, and the kind.

A. My recollection is from 1892, early in the year. They were what we know as Goldie ribbed plate. They had two ribs on the under side and a shoulder on the upper side.

Q. 9. And under whose general supervision or direction were the plates gotten up?

A. Mr. William Goldie.

Q. 10. And did you prepare or turn the rolls for making these plates?

A. Yes, sir.

Q. 11. The first plates of this kind that were rolled, did they have a flat surface on the top except the shoulder?

A. Yes, sir.

Q. 12. Please look at the plate which I will now show you,
776 and tell us if you can how it conforms to or differs from the first plates rolled.

A. This is in my judgment, one of the first plates. It conforms in every way, as far as I can now remember, except to what wear and tear of time.

Offered in evidence and marked "Defendants' John Ambler Exhibit, Tie Plate.'"

By Mr. Brown: Objected to as irrelevant and immaterial.

By Mr. Reed:

Q. 13. Was there at any time any change in the style of the plate that was rolled at the mills?

A. There was a concave of about 1/8 inch, I believe, on the top of the plate and the necessary projection on the underside to maintain the thickness. That portion of the plate over which the rail was to be placed.

Q. 14. And did this concavity run parallel to the shoulder?

A. It did.

Q. 15. How soon was this change introducing the cavity on top, made after you began rolling plates?

A. I couldn't be positive as to the length of time, but not a very great while.

Q. 16. Did you make or turn the rolls that were used in making the new kind of plate with the cavity?

A. I did.

Q. 17. About when did the rolling of this tie plate with the cavity on top, begin?

A. I think I have already answered that question by saying I

couldn't recall the length of time after we began manufacturing the tie plates.

Q. 18. Please give us your best recollection as to the year when the rolling of the plates with the cavity was begun.

A. 1892.

Q. 19. And I understand that these plates with the cavity had the top shoulder and two bottom ribs like the first.

A. Yes, sir.

Q. 20. Please look at Defendants' Exhibit C, and state if that is a specimen of the plates with the cavity that were rolled.

A. In my judgment, this is one of the plates with the cavity. It is somewhat worn by using it, and flattened.

Q. 21. What was the name, if any, given at the mill to plates like Defendants' Exhibit C?

A. Commonly known as Goldie's cushion plate.

Q. 22. And about how long were plates like Exhibit C rolled at the mill of Dilworth, Porter Company, if you know?

777 A. They were rolled for eighteen months or two years, possible a little longer.

Q. 23. Can you tell us about the quantities in which plates like Exhibit C were rolled?

A. I had no way of knowing the quantities rolled, but they were in quite considerable quantities. Frequently running day after day at a stretch.

Q. 24. And how did your duties bring you into connection with them?

A. In the turning of the rolls, and in case the work was not perfect making such change in the rolls as seemed necessary to perfect the work.

Q. 25. What persons were connected with the rolling and shearing or cutting of these plates, like Exhibit C?

A. Mr. Afred Davis, superintended the rolling, and a Mr. Zimmerman the shearing and punching.

Q. 26. Did your duties take you daily into the room or places where these plates were being rolled?

A. In case of their not being perfect, I was called to look at the work and see what it would be necessary to change.

Q. 27. Please give us as accurate a statement as you can, as to how frequently you saw these plates like Exhibit C rolled, and how often they came under your notice.

A. That would be pretty hard to do. You will understand that these rolls would become worn in which case they were brought back to me to go over with what we called a dressing; that is, putting them in the shape they were before.

Q. 28. Did you during the period that plates like Exhibit C were rolled, have occasion to repair and dress the rolls?

A. I did.

Q. 29. Mr. Ambler, was there any other change at any time in the kind of plates that were rolled at Dilworth, Porter & Co.'s while you were there, and if so, what was it?

A. They afterward adopted what we knew as the Goldie claw

plate, which was made on the top side similar to this one, this rib plate, Exhibit C. On the under side the ribs were taken away and a flange made at each side of the plate, from an inch and a quarter to an inch and a half. This flange was afterwards partly taken away and portions of it left, making a claw, we called it, to go into the wood.

Q. 30. Was there more than one claw?

A. Usually two at each side.

Q. 31. Please look at the drawings, Figs. 1 and 2 of letters patent specifications W. Goldie, tie plate, No. 540,356, patented
778 June 4, 1895, and state how the last kind of tie plate rolled at the mills, compared with the plates shown in Figs. 1 and 2.

A. My recollection of it is we made this plate as Fig. No. 2 for a time, then adopted Fig. No. 1 almost entirely. These claws were not always placed as in these drawings, their positions varying. They were also under Mr. Zimmerman's supervision, given a chisel edge after rolling, sometimes a diamond point edge.

Q. 32. Did the first of these claw plates rolled have the cavity in the top as shown in Fig. 2?

A. I think they did. It is my recollection that they did.

Q. 33. And then after a time, I understand you, they ceased to be rolled with a cavity and were rolled with a flat top and shoulder like Fig. 1.

A. Yes, sir.

Q. 34. What as to the quantities of the claw plates rolled with the cavity in the top?

A. Comparatively speaking, a small quantity; that is, in comparison with the entire quantity rolled.

Q. 35. What would you say as to the number of tons rolled of the claw plate with the top cavity?

A. I have no way of knowing the quantity rolled. The number, as I said before, in comparison, was small.

Q. 36. What would you say as to the claw plates with the top cavity being rolled in commercial quantities to supply orders?

A. They were not rolled for any other purpose. They rolled either style of plate for sale.

Q. 37. Who directed the changes or alterations when the cavity on the top was put in the ribbed plate?

A. William Goldie.

Q. 38. And who directed the alterations or changes which resulted in the claw plates, as they were called?

A. William Goldie.

Q. 39. What did you understand the connection of Wm. Goldie with this the rolling of these different plates to be?

A. He directed them on the ground that he was the patentee.

Q. 40. Look at the aluminum model marked Exhibit O-10, and state to what extent if any that represents the ribbed plates with the top cavity that were rolled at Dilworth, Porter Co.'s mills as you have described, specifying any difference.

779 A. This is in my judgment, a little heavier generally. The plates we rolled also had a depression at each edge, making

them thinner at the edge, after the style of the other, pointing to Defendants' Exhibit John Ambler Tie Plate. On the under side this claw is somewhat longer I think that is all.

Q. 41. When you say "this claw is somewhat longer," you refer to claws on the bottom of Defendants' Exhibit O-10?

A. Yes, sir.

Q. 42. And when you stated that the plates rolled had a depression at each edge, you meant that the edges were beveled off for a little ways, did you not?

A. Yes, some distance.

Q. 43. Other than the particulars which you have detailed, this Exhibit O-10 substantially represents the plates with the cavity on the top rolled by Dilworth, Porter & Co., as you have described?

A. Yes, sir.

Q. 44. You were subpœnaed in this suit?

A. I was.

Q. 45. And you have no interest in it?

A. None whatever.

Cross-examination by Taylor E. Brown:

X Q. 46. How old are you, Mr. Ambler?

A. Sixty-six.

X Q. 47. And where are you employed at the present time?

A. With the Carnegie Steel Co., Youngstown, Ohio.

X Q. 48. You say the concavity in the Goldie plates was about an ⅛ of an inch. You mean at its deepest part, I suppose?

A. Yes, sir.

X Q. 49. It was not a groove cut into the top of the plate for an ⅛ of an inch, was it, but rather a bend in the plate itself?

A. It was both. It is a groove and through having corresponding depression on the under side, has the appearance of a bend.

X Q. 50. But the plate was the same thickness throughout as distinguished from one in which the metal was actually cut out of one surface only?

A. Yes, sir.

X Q. 51. You say that this plate which you have identified as being the same as Defendants' Exhibit C, was "commonly
780 known as Goldie's cushion plate." What did you mean by cushion?

A. It was sometimes also called spring plate, and the idea was that it made the plate less rigid.

X Q. 52. That was the purpose, then, of making this depression or bend in the plate, was it?

A. I so understood it.

X Q. 53. Do you happen to know why this plate was abandoned and the claw plate adopted in its place?

A. I have no knowledge of that; I have an idea of my own.

X Q. 54. What was your understanding of the matter?

A. The customers, meaning the Railroad Companies, preferred the claw plate.

X Q. 55. Do you know what was the daily capacity of the rolls of Dilworth, Porter & Co. at that time for turning out these Goldie cushion plates?

A. No, sir.

X Q. 56. As between the Goldie cushion plate and the Goldie claw plate, which was rolled in the larger quantities?

A. The claw plate.

X Q. 57. Are you quite certain that Goldie claw plates with the concavity on the top surface were rolled?

A. I don't want to make a positive statement of that fact, but my recollection of the matter is that they were.

Redirect examination by Mr. Reed:

R. D. Q. 59. Were the ribbed plates which you first mentioned in your testimony, the first tie plates that were rolled at Dilworth, Porter & Co.'s, after you went into the employ of that firm?

A. Yes, sir.

R. D. Q. 60. And were Dilworth, Porter & Co. rolling Goldie claw plates when you left its employ?

A. Yes, sir.

R. D. Q. 61. In large quantities?

A. In large quantities.

R. D. Q. 62. Is Dilworth, Porter & Co. a large establishment in the production of tie plates or other railroad supplies?

A. They manufacture a very great quantity of such material, but they are not as large as compared with the Carnegie Steel Company.

JOHN AMBLER.

781 ANDREW CULLEN, a witness of lawful age, having been first duly sworn, cautioned and examined, testified as follows:

Direct examination by Frank F. Reed:

Q. 1. Please state your name, age, residence and occupation.

A. Andrew Cullen; 53 Greenbush St., Mt. Washington; roller. I have charge of the rolls now.

Q. 2. Were you ever in the employ of Dilworth, Porter & Company, of Pittsburgh?

A. Yes, sir.

Q. 3. What did you do?

A. Roller.

Q. 4. What was the period of your employment; when did you go, and when, if ever, did you quit?

A. From May, 1888, until 1905.

Q. 5. And in what part of the works were you?

A. Employed on the continuous mill.

Q. 6. Do you know of tie plates being rolled in that mill?

A. Yes.

Q. 7. Who superintended the rolling of the tie plates.

A. Mr. Hunter was superintendent, Alfred Davis was the roller.

Q. 8. When were the first tie plates rolled, to your knowledge?

A. In 1892 and 1893, that was about the time.

Q. 9. Do you remember the kind of style of tie plates that you first saw rolled?

A. The rib plate, as near as I remember.

Q. 10. Look at the tie plate marked "Defendant's Exhibit John Ambler Tie Plate," and state whether that is the first kind rolled?

A. It would be hard to tell whether that is the first one or not. I am not sure whether that is the first or not. It would depend on whether it was concave or not.

Q. 11. Assuming that it is a flat top plate, is that a specimen of the first plate rolled?

A. That looks like a specimen to me.

Q. 12. Look at "Defendants' Exhibit C," and state whether you ever saw that kind of a tie plate rolled at Dilworth-Porter's?

A. Yes, that was rolled at Dilworth-Porter's.

782 Q. 13. About what time were tie plates like Exhibit C rolled at Dilworth & Porters?

A. It would be about six months after they rolled the first plate.

Q. 14. That would be along in 1892 or 1893?

A. Yes.

Q. 15. About how long did they continue to roll tie plates like Exhibit C at Dilworth-Porter's?

A. Not over a year.

Q. 16. In about what quantities.

A. Well, I couldn't tell the amount of days they rolled them, but they would average from 50 to 60 tons a day when they did roll them.

Q. 17. Were the tie plates like Exhibit C so rolled intended for use and delivery?

A. Yes.

Q. 18. At the time you saw these plates rolled like Exhibit C did you notice the depression in the top?

A. Yes, I remember the depression.

Q. 19. Do you remember who had general supervision over this plate as to the getting it up?

A. Mr. Goldie.

Q. 20. Do you remember whether after plates like Exhibit C had been rolled for a time, there was any different plate gotten up and rolled?

A. Yes.

Q. 21. What was that called?

A. The Glendon flange plate.

Q. 22. Who got that up?

A. Mr. Goldie.

Q. 23. Do you remember of there being rolled at the mills the plate called Goldie Claw Plate?

A. Yes.

Q. 24. What was that like?

A. A plate similar to this, only it had the claws on it, under each corner (witness points to Exhibit C).

Q. 25. Look at Figs. 1 and 2 of the specifications Letters Patent

W. Goldie, No. 450,356, June 4, 1895, and state whether at any time while you were at Dilworth, Porter & Company, plates like figures 1 and 2 were rolled.

A. They were both rolled while I was employed at Dilworth & Porter's.

Q. 26. That is, tie plates with both the flat and concave tops were rolled?

A. As near as I remember, yes.

783 Q. 27. I mean that of the variety known as Goldie Claw Plates, some had flat tops with shoulders and some concave tops with shoulders?

A. Yes.

Q. 28. Do you remember which was rolled first of these two kinds?

A. Fig. 1 was rolled first. As near as I remember this Fig. 1 was rolled first.

Q. 29. In what quantities, that is, large or small, were the claw plates with the concave tops rolled?

A. I don't remember. They were mostly rolled for samples.

Q. 30. And what kind of the plates were being rolled at Dilworth, Porter & Company when you quit?

A. They were rolling the rib plate, the flange plate and the claw plate commonly called.

Q. 31. You spoke about the Glendon flange plate being rolled. When did they begin rolling that, if you can recall?

A. I don't remember just exactly when they began to roll it, but 1893 or 1894.

Q. 32. I am speaking of the Glendon flange plate. Please describe that plate.

A. A bar about 6 or 7 inches wide. We rolled the sizes that we made, you know. Made channel shape with a rib and top. They were rolled from 20 to 30 feet long.

Q. 33. What did the Glendon flange have on the bottom.

A. It had the claws on. It was rolled in a regular channel shape first, you know, took to the shears and cut in lengths and part of the flange was punched out to leave the claws.

Q. 34. Now that was what was called the Goldie claw plate, was it?

A. Yes, sir.

Q. 35. I would like to have you describe the Glendon flange plate that you have referred to. Was that the same as the Goldie claw?

A. Yes, that was the same as the Goldie claw before it was punched.

Q. 36. Now please describe to us as fully as you can what you have meant when you spoke of the Glendon flange plate being rolled. What kind of top did it have?

A. This (pointing to Figs. 1 and 2 of the Goldie patent specification) is it.

Q. 37. And on the bottom it had flanges instead of claws?

784 A. It had the flanges on it before it was punched out to make a claw plate of it.

Q. 38. Are Dilworth, Porter & Co., large manufacturers of tie plates?

A. Yes.

Q. 39. You have no interest in this case?

A. No.

Q. 40. And I believe you were subpœnaed?

A. Yes, sir.

Cross-examination by Mr. Brown:

X Q. 41. How old are you, Mr. Cullen?

A. 47 years of age.

X Q. 42. Where are you employed at the present time?

A. Allegheny Steel Co., Breckenridge, Pa.

X Q. 43. Am I correct in understanding that those Goldie claw plates that had the concave on the top, were simply rolled as sample plates?

A. As near as I know, they were rolled mostly sample plates.

X Q. 44. There were not very many of those rolled then?

A. I wouldn't tell how many was rolled altogether.

X Q. 45. The Goldie plates which had the top shoulder and the concave, but which had ribs underneath, instead of claws, did you ever hear those called the Goldie spring plate or the Goldie cushion plate?

A. Sometimes they were called that.

X Q. 46. Do you remember what those plates weighed on an average?

A. That would all depend on the thickness of the plate, I don't remember the weights.

X Q. 47. They would approximate six pounds, would they not?

A. Some of them would, and some more than that; it would depend upon the thickness.

X Q. 48. And you think they rolled something like 50 to 60 tons a day of those plates?

A. Yes.

X Q. 49. On how many different days do you think they rolled those plates?

A. I couldn't tell you how many different days; quite often.

X Q. 50. Well, if one of those plates weighed, say 6
785 pounds, and they rolled 60 tons a day, that would be about 20,000 plates, wouldn't it?

A. Yes.

X Q. 51. And from that figure, can't you give us some better idea of how many plates of that particular style were rolled altogether?

A. I couldn't tell.

X Q. 52. And you say these Goldie spring plates or cushion plates, as they were sometimes called, were rolled for a year off and on?

A. Yes, about a year.

X Q. 53. And do you happen to know why Dilworth, Porter & Company abandoned the rolling of those plates?

A. No, I don't know.

X Q. 54. But they were followed by the Goldie claw plate with a flat top, were they not?

A. Yes.

X Q. 55. Would you say that there were more Goldie flat top claw plates rolled, than were rolled of the Goldie Cushion Plate?

A. Yes.

X Q. 56. A great many more, were there not?

A. Oh, yes.

X Q. 57. And when you say 50 or 60 tons a day were rolled, is that just the capacity of the day shift?

A. Of the day shift?

X Q. 58. Was the mill equipped with more than one set of rolls so that they could roll a larger number than 50 or 60 tons a day if they had so desired?

A. They couldn't have rolled any more than that.

ANDREW CULLEN.

UNITED STATES OF AMERICA,
Western District of Pennsylvania, ss:

I, H. D. Gamble, Clerk of the United States Circuit Court for the Western District of Pennsylvania, certify that the above and foregoing deposition of John Ambler and Andrew Cullen were taken before me in my office, commencing at eleven o'clock on the 5th day of April, A. D. 1910, in the above and foregoing suit; that the said depositions were taken by consent of parties, notice of time and place and names of witnesses being waived; that the attend-
786 ances as stated in the caption were had on behalf of the various parties; that each of the witnesses was before any examination by me first duly sworn, examined and cautioned as by statute provided; that after the reduction of the depositions to writing, which was done in the presence of the witnesses and in my presence, the depositions were respectively read over to said witnesses and by said witnesses respectively subscribed and sworn to; that the various exhibits referred to in the depositions were produced and exhibited to the witnesses.

In Testimony Whereof, I have hereunto set my hand and seal, this 5th day of April, A. D. 1910.

[SEAL.] H. D. GAMBLE,
Sp. Exm. & Clerk U. S. Cir. Court.

Exm. Fees $9.30.

(Endorsed:) Filed April 7, 1910. H. S. Stoddard, Clerk.

[redacted]

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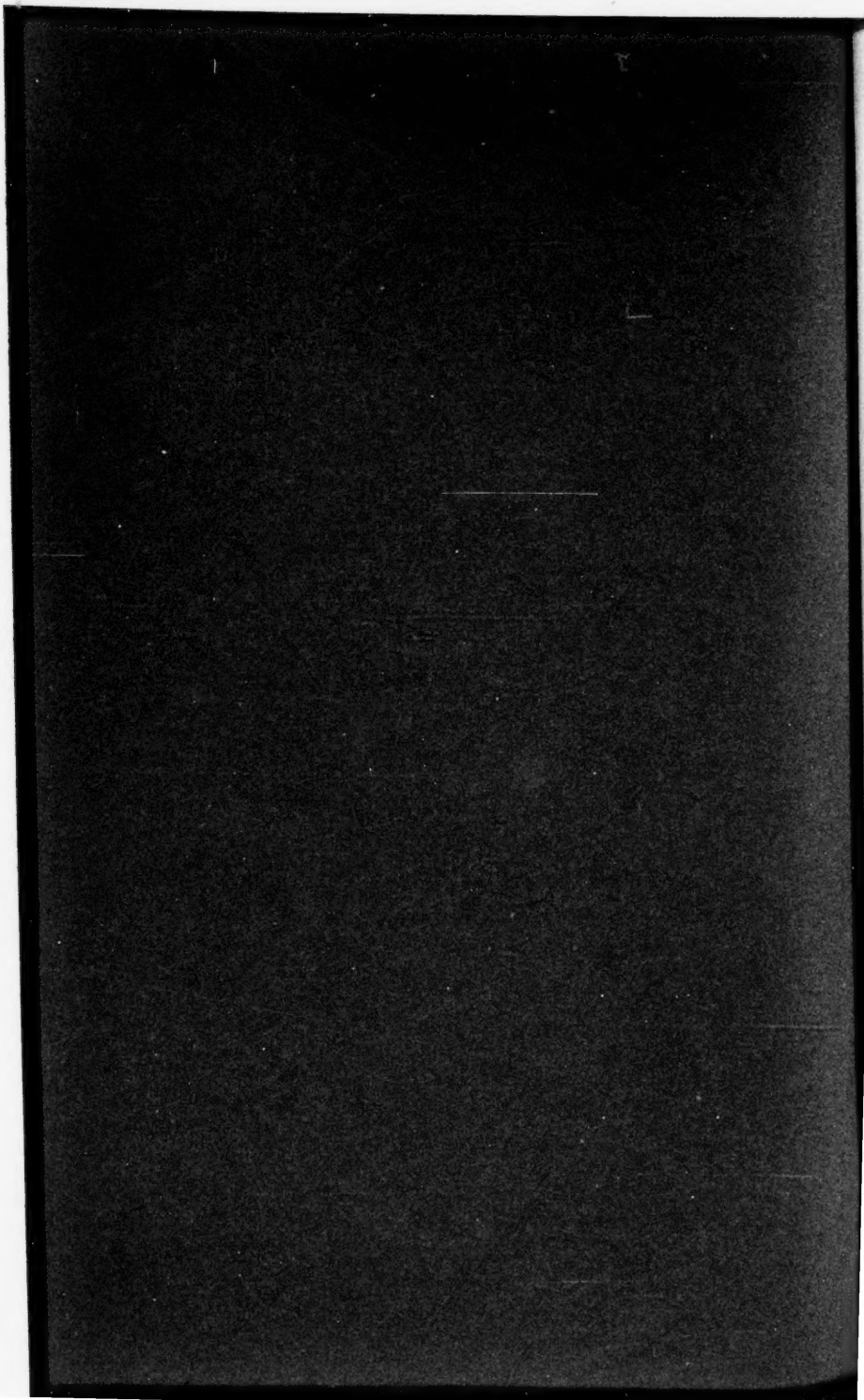

(24,569)

SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1915.

No. 357.

THE HART STEEL COMPANY AND GUILFORD S. WOOD, PETITIONERS,

vs.

THE RAILROAD SUPPLY COMPANY.

ON WRIT OF CERTIORARI TO THE UNITED STATES CIRCUIT COURT OF APPEALS FOR THE SEVENTH CIRCUIT.

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VOL. II.

In the United States Circuit Court of Appeals for the Seventh Circuit, October Term, A. D. 1911.

No. 1886.

THE RAILROAD SUPPLY COMPANY, Appellant,

vs.

THE HART STEEL COMPANY and GUILFORD S. WOOD, Appellees.

Mr. Taylor E. Brown, Mr. C. C. Linthicum, Mr. Clarence Poole, Counsel for Appellant.

Mr. Frank F. Reed, Mr. Edward S. Rogers, Mr. Frederick P. Fish, Counsel for Appellees.

Appeal from the Circuit Court of the United States for the Northern District of Illinois, Eastern Division.

787 REBUTTAL PROOFS.

Notice for Taking Depositions.

In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

Notice for Taking Depositions.

To James Negley Cooke, Esq., Pittsburg, Pa.; Frank F. Reed, Esq., Chicago, Ill., and Edward S. Rogers, Esq., Chicago, Ills., Solicitors for Defendants.

DEAR SIRS: You will please take notice that on Monday, May 9, 1910, beginning at 2 o'clock in the afternoon, we shall proceed before George R. Wilkins, notary public, or other competent officer, to take proofs in rebuttal on behalf of the above named complainant to be used on the final hearing of the above entitled cause; the witnesses whose evidence is to be adduced upon this occasion being N. J. Comerford, A. J. W. Copeland, C. P. Cogswell, Jr., and such other witnessess as may be then and there produced by or on behalf of the complainant; and the place of examination will be at the offices of Messrs. Poole & Brown, Suite 808 Marquette Bldg., Chicago, Illinois.

In the event of such examination not being completed on the date noted, the hearing will be continued to include May 10th and May 11th, and if not then concluded will be continued until Tuesday, May 17th.

788 You will please further take notice that before the same officer, at the same place, on Tuesday, May 17, 1910, beginning at 10 o'clock in the forenoon, we shall similarly examine Dr. F. P. Mason, Henry S. Hawley and such other witnesses as may be then and there produced by or on behalf of the complainant, and that if said examination is not completed the same will be continued on May 18th and on the forenoon only of May 19th.

You will further please take notice that on Wednesday, May 25th, we shall proceed before H. D. Gamble, Esq., Clerk of the United States Circuit Court for the Western District of Pennsylvania, or some other competent officer, in the office of said H. D. Gamble, in the Post Office building, Pittsburg, Pa., beginning at the hour of 10 o'clock in the forenoon, to take proofs in rebuttal on behalf of the above named complainant to be used on the final hearing of the above entitled cause, the witnesses to be examined being William F. Schleiter, William Goldie and such other witnesses as may be then

and there produced by and on behalf of the complainant. If the said examination shall not be completed on the date last mentioned the same will be continued to Thursday, May 26th, and to Friday, May 27, 1910, as may be necessary.

You will further please take notice that beginning at 2 o'clock in the afternoon on Monday, June 13, 1910, before George R. Wilkins, notary public, or other competent officer, at the offices of Messrs Poole & Brown, suite 808 Marquette building, Chicago, Ill., we shall proceed to take rebuttal proofs on behalf of the above named complainant to be used on the final hearing of the above entitled cause, the witnesses to be examined on this occasion being E. H. Bell, John Henry McElroy and such other witnesses as may be then and there produced by and on behalf of the complainant. You will please take notice that it is expected that the examination of these last named witnesses and others that may be produced at this session will continue from day to day beginning on June 13th to and including Saturday, June 25th.

We desire the evidence in this cause to be adduced orally in accordance with the provisions of the Sixty Seventh Rule in Equity as amended, the statutes in such case made and provided, and the Rules of this Court.

789 You are invited to attend and cross-examine the witnesses.

The examination of the witnesses at the times and places above noted will be continued from day to day upon the record, to and including the dates herein noted, so far as it may be necessary to take such continuances in order to complete the examination of said witnesses.

Dated at Chicago, May 5, 1910.

POOLE & BROWN,
Solicitors for Complainant.

Service of the foregoing notice is accepted and copy thereof is hereby acknowledged this 6th day of May, 1910.

JAMES N. COOKE,
FRANK F. REED,
Solicitors for Defendants.

790 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

Rebuttal Proofs.

CHICAGO, ILLINOIS, May 9, 1910.

Met pursuant to attached notice*d* before me, G. R. Wilkins, notary public, acting by consent of counsel as Special Examiner, at the

offices of Messrs. Poole & Brown, 808 Marquette building, 204 Dearborn street, Chicago, Illinois, at 2 p. m. this 9th day of May, 1910, to take proofs in rebuttal on behalf of the complainant to be read in evidence at the final hearing of the above entitled cause.

Present:

Col. Taylor E. Brown, of Poole & Brown, on behalf of the complainant.

Frank F. Reed, Esq., and J. Negley Cooke, Esq., on behalf of the defendants.

791 And thereupon, JOHN H. WALLACE, a witness produced on behalf of the com[illegible]ant, having been first duly cautioned and sworn, testifies u[illegible], in answer to interrogatories propounded by complaina[illegible]nsel, Col. Brown, as follows, to-wit:

Q. 1. You may state your name, age, residence and occupation?

A. John H. Wallace, age 53, San Francisco, Civil Engineer.

Q. 2. In what line of work have you, as an engineer, been engaged?

A. Principally in Railroad work.

Q. 3. If you are familiar with railroad track construction, maintenance of way and devices used in track, please say so and also state what education, general and mechanical, you have had and what experience you have had along these lines that would qualify you to testify in this case as an authority on these subjects. You may state this answer as fully as you please.

A. I am familiar with maintenance of way and track. After leaving school I was engaged in several surveys for location of railways and on construction and early in the year 1884 I made up my mind I would prefer that branch of engineering pertaining to maintenance of way of railroads and made application to Mr. W. G. Curtis, who was then Superintendent of Track of the Central Pacific Railroad for a position. He first offered me a position in charge of a large extra gang ballasting and track laying. From that I entered the office of the Division Road Master as Assistant Engineer. Later on was appointed Assistant Division Road Master, then Division Road Master, then Assistant Superintendent of track. After the Southern Pacific Company took control of the Central Pacific Company the title was changed to Assistant Engineer of Main-
792 tenance of Way. In 1900 I was made Engineer of Maintenance of Way and continued in that position until I left the Company, in 1908.

Q. 4. How large a system, that is by trackage, is the Southern Pacific Railroad?

A. The part of the Southern Pacific track with which I was connected is known as the "Pacific System," it embraces all the lines west of Ogden and El Paso and South of Portland, Oregon, about forty-two hundred miles. About 1900 some changes were made which reduced the mileage of the Pacific System trackage.

Q. 5. Are you acquainted with an engineer now connected with the Harriman lines by the name of John Dove Isaacs?

A. I am.

Q. 6. Was he ever associated with you in your work on the Southern Pacific Road, and if so, about when?

A. About 92 or '3 he was made Assistant Engineer of Maintenance of Way of the Southern Pacific. When I was made Engineer of Maintenance of Way he remained as Assistant Engineer.

Q. 7. His position at that time was subordinate to yours and under your direction, was it?

A. Yes.

Q. 8. It has been stated in this case, Mr. Wallace, that the Southern Pacific, or the Pacific System, has used various types of tie-plates from time to time. I wish you would describe, as nearly as you can now recollect, the very first type of tie-plate used on the Southern Pacific, that came under your observation, and after that state the names of such other types of tie-plates as may have been used to your knowledge?

A. When I went to work for the Central Pacific, afterwards called the Southern Pacific, practically all the ties in use were red-
793 wood, a timber exceedingly durable as regards decay, but extremely soft and thus rapidly and easily worn or cut away. As a result the ties in the main lines were short lived. When taken out of track because of rail wear they were perfectly sound. Individual instances have come to my attention where ties of this timber have been in track twenty-four or five years. I have no doubt many last still longer. The question of preventing the rail from cutting these ties was therefore an important one and the question of using something between the rail and the tie was a matter of frequent discussion among the track men. Several of the Road Masters had tried experiences of their own, getting pieces of plate-iron and putting them under the rail. I remember one Road Master tried to solve the problem by using pieces of rubber belting he had picked up somewhere.

When I was made Assistant Superintendent of Track I had an opportunity to take up the matter and try and work out a solution. Here is a blue print of the first tie-plate which I remember of having had made. It consisted of a flat sheet of steel with a flange turned down at each edge. It was twelve inches long and eight inches between the flanges, just wide enough to cover the tie, that was eight inches wide. Only a few of them were made as they were too heavy and cost too much to be economical. I might say that that was in 1889. In 1891 I designed the plate shown in this blue print. This was a plate, flat on the bottom, eleven inches long, eight inches wide, and had a rib on its upper surface against which the base of the rail bore. Rolls were prepared at our Sacramento shops and a number of these plates were made and put in service. In 1892 I prepared a design for another plate. This was known as the Channel plate. It was flat on the top and bottom, with
794 flanges rolled on each edge, the plate being seven and a half inches in width and from eight and a half to ten inches in length, the length depending on the size of the rail under which it

was to be used. This design was gotten up specially for use with screw spikes.

In 1893 I re-designed the 1891 plate, reducing the length to nine inches instead of eleven, the other features of the plate remaining unchanged. The reason for this change was that I concluded that we made this too wide and that economy could be effected without loss of efficiency by reducing the width. I have no drawing of the 1893 plate but have here a drawing dated 1894 which is exactly the same as nearly as I can remember. This plate has got to be known as the Sacramento plate and has been used in large numbers by the Southern Pacific Company.

About '91 and '2 the Atlantic System began using the Servis tie-plate which had been placed on the market a short time before. To the best of my recollection we did not use any Servis plates on the Pacific System until two or three years later. We then began making purchases of the Servis plate and continued to do so until the Wolhaupter plate was placed on the market. In about '97 or '8 we began buying it.

The next plate I think was the Q & W, it was a modification of the Servis, or rather a combination of the Servis and Wolhaupter. In 1899 we bought very large numbers of the Q & W and also of the Glendon which was put on the market about the same time. From that time on until 1905 we purchased large numbers of the Q & W and Glendon. These plates, the Servis, the Wolhaupter, Q & W and Glendon all proved to be too weak as a large number of failures were reported. In the meantime we continued using the Sacramento plate. Soon after the Southern Pacific came under Mr. Harriman's control and Mr. Kruttschnitt was placed in charge
795 of all the Harriman lines he began the adopting of standards. Amongst other standards he wished to adopt was that of a tie-plate.

Early in the summer of 1904 he came out West and I met him, went over the line with him and we had several conferences on the tie-plate question. As I said before several millions of the various kinds of plates were used. The failures of the Servis, Wolhaupter, Glendon, Q & W were plainly in evidence. In going over the Coast line between Los Angeles and San Francisco, where some forty or fifty miles of track had been laid with Sacramento tie-plates about eight years before, we stopped the train at several places where he could see these plates and judge of the service they were giving. As a result of this trip he authorized me to redesign the Sacramento plate with the object of adopting it as standard for the Harriman Lines.

Some weeks later he asked that the drawing be completed and sent to him with a brief description for publication in some Railroad Journal. Shortly after this we received notice from Mr. Kruttschnitt that the plate, drawing of which I had sent him, would infringe on the Wolhaupter patent.

Mr. Reed: The statement objected to as secondary evidence.

Witness continues: We therefore changed the drawing and this

is the result. It is a plate exactly similar to the Sacramento plate, I will not say exactly similar, but similar, flat on the bottom with a rib on top to engage the base of the rail. A few weeks later we received word that arrangements had been made to roll the plate as originally designed.

Mr. Reed: Same objection as before.

796 A new drawing was made showing the plate that is now standard on the Harriman System. This has a flat bottom surface with a rib on the upper surface to engage the base of the rail and two grooves across the plate in a direction longitudinally with the rail, an inch wide and three sixteenths deep, as shown in this drawing, C. S. 23 A.

Col. Brown: The six blue prints presented by the witness and identified in his last answer are now introduced in evidence on behalf of the complainant and the same are marked as follows: "Complainant's Exhibit No. 59. Wallace Blue Print, First Southern Pacific Tie-Plate. G. R. Wilkins, notary public, 5/9/10." the same being a blue print bearing in addition to the isometrical view the section on the plan the words and figures "S. P. Co. Pacific System, San Francisco, Track Dept. Apr. 27, 1889.

(Here follow diagrams marked pages 797 to 808.)

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISCTRICT OF ILLINOIS.

The RAILROAD SUPPLY COMPANY, Complainant, vs. THE HART STEEL COMPANY and GUILFORD S. WOOD Defendant.) In Chancery,) No. 29,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

THE RAILROAD SUPPLY COMPANY, Complainant, vs. THE ELYRIA IRON AND STEEL COMPANY, Defendant.) In Chancery,) No. 7,668.

"Complainant's Exhibit Number 59, Wallace Blue Print, First Southern Pacific Tie Plate."

5/9/10.

Notary Public.

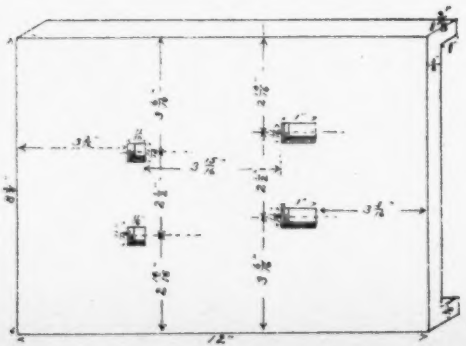
S.P.CO. PACIFIC SYSTEM TRACK APR. 27 1889 DEPT. SAN FRANCISCO

TIE PLATE.

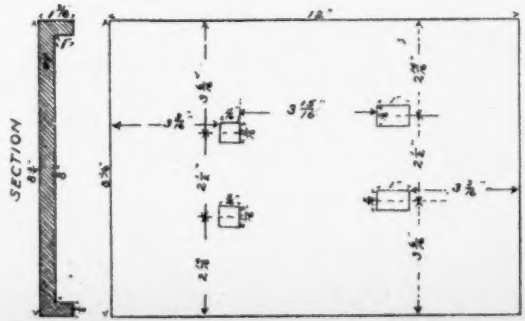
PLAN No 3.

TRACING { SHELF 9 No 60
PRINT { SHELF 2 No 10

ISOMETRICAL VIEW



PLAN



797

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF ILLINOIS.

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THE RAILROAD SUPPLY CO.
vs.
THE HART STEEL COMPANY
and GUILFORD S. WOOD

No. 29,294.

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF OHIO.

--**--

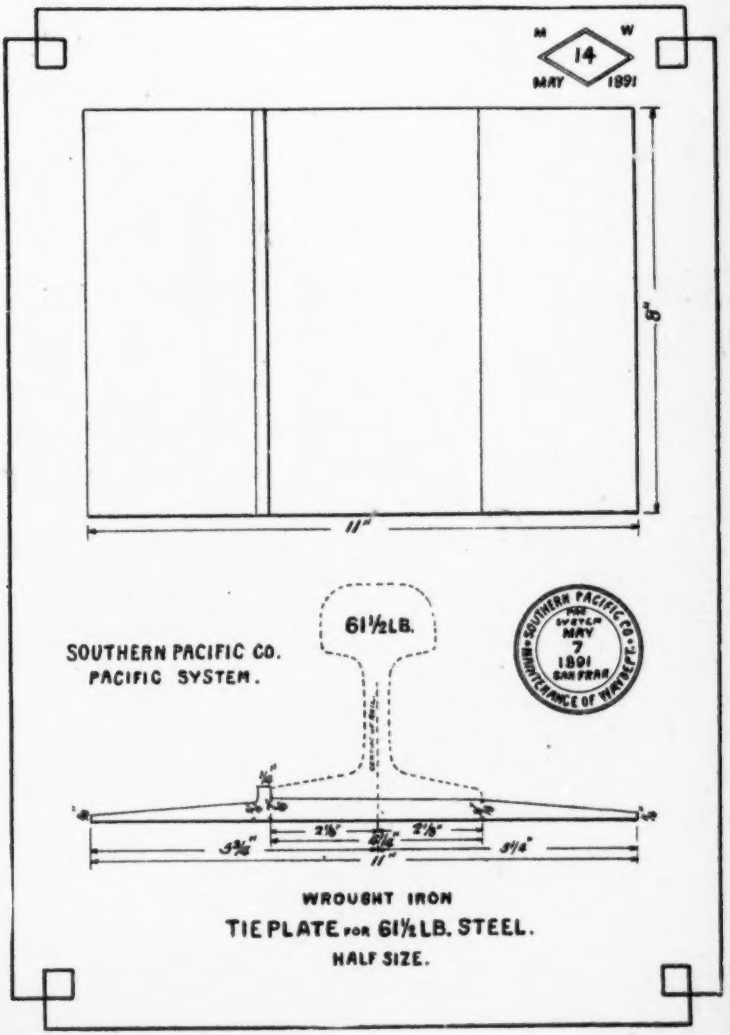
THE RAILROAD SUPPLY CO.
vs.
THE ELYRIA IRON AND
STEEL COMPANY

No. 7,668.

"Complainant's Exhibit No. 60, Wallace Blue Print, Second Southern Pacific Tie Plate."

5/9/10.

G. R. Wilkins
Notary Public.



IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF ILLINOIS.

--**--

The Railroad Supply Co.)
vs.) No.
The Hart Steel Company) 29,294.
and Guilford S. Wood)

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF OHIO.

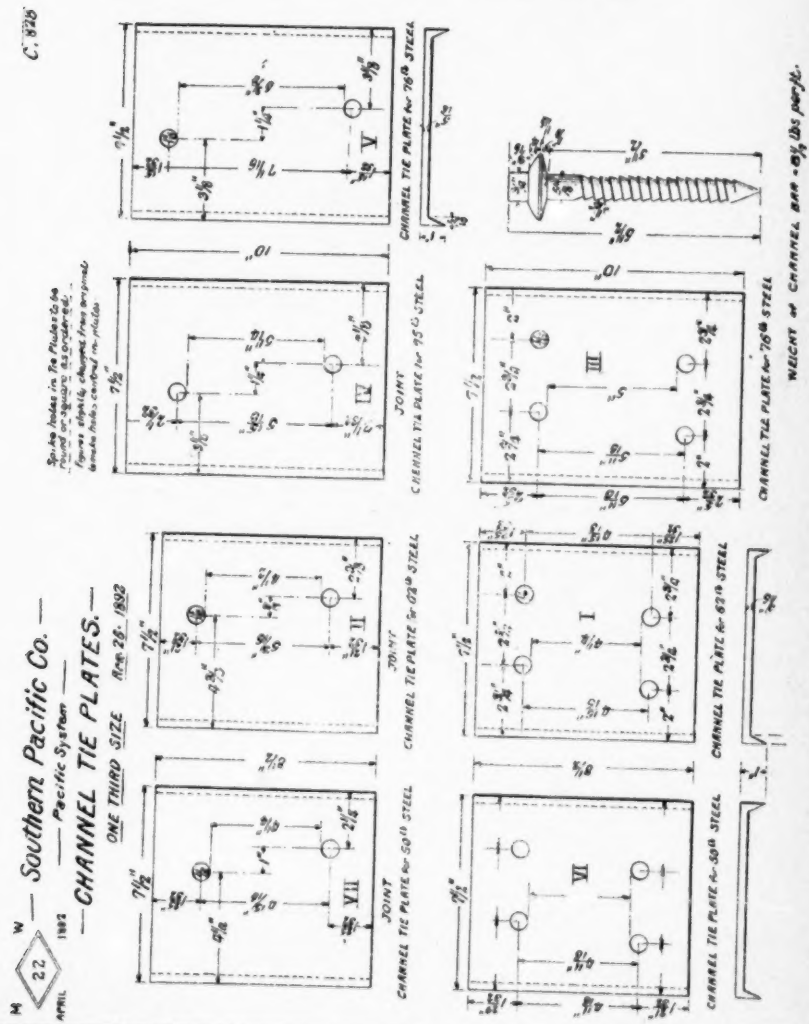
--**--

The Railroad Supply Co.)
vs.) No.
The Elyria Iron and) 7,668.
Steel Company)

"Complainant's Exhibit No. 61, Wallace Blue-Print Third or Channel Southern Pacific Tie Plate."

5/9/1910.

Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

THE RAILROAD SUPPLY CO., vs. THE HART STEEL COMPANY and GUILFORD S. HOOD

No. 79,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

THE RAILROAD SUPPLY CO., vs. THE ILLINOIS IRON AND STEEL COMPANY

No. 7,680.

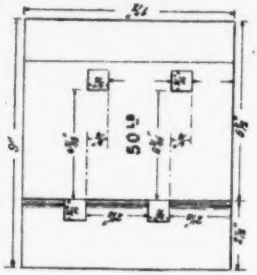
"Complainant's Exhibit No. 45. Sacramento Tie Plate, Southern Pacific".

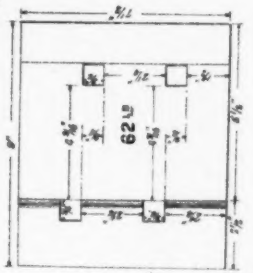
5/2/10.

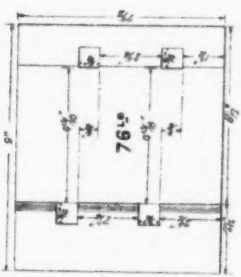
Notary Public.

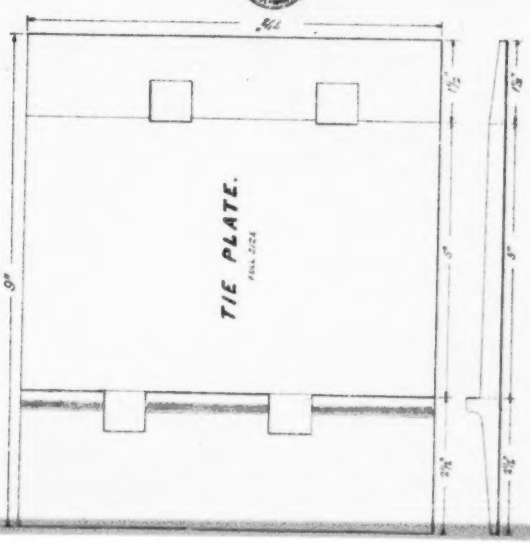
DIAGRAMS FOR LOCATING SPIKE HOLES

HALF SIZE









IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF ILLINOIS.

THE RAILROAD SUPPLY CO.
vs. No.
THE HART STEEL COMPANY and GUILFORD S. WOOD } 29,294.

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF OHIO.

THE RAILROAD SUPPLY CO.
vs. } No.
THE ELYRIA IRON AND STEEL COMPANY } 7,668.

"Complainant's Exhibit No. 63, Wallace Blue Print Last Sacramento Southern Pacific Tie Plate."

5/9/10.

Notary Public.

63
23

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF ILLINOIS

THE RAILROAD SUPPLY CO.
vs. No. 29,294.
THE HART STEEL COMPANY
and GUILFORD S. WOOD

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF OHIO.

THE RAILROAD SUPPLY CO.
vs. No. 7,668.
THE ELYRIA IRON AND
STEEL COMPANY

"Complainant's Exhibit No. 34, Wallace Blue Print, Harriman Standard Tie Plate."

9/9/10.

O. K. Wilkins
Notary Public.

A second blue print bearing in addition to the plan and end elevation words and figures as follows: "Southern Pacific Co. Maintenance of Way Dept. Pac. System, San. Fran. May 7, 1891, which is marked and identified as "Complainant's Exhibit No. 60, Wallace Blue Print, Second Southern Pacific Tie Plate, G. R. Wilkins Notary Public, 5/9/10.

Third: A blue print showing five plan views, three end views and one screw spike and bearing words and figures as follows: "Southern Pacific System, Channel Tie Plates, Apr. 26, 1892, and in the upper right-hand corner, C. 828, the same being marked "Complainant's Exhibit No. 61, Wallace Blue Print, Third or Channel Southern Pacific Tie-Plate, G. R. Wilkins, Notary Public, 5/9/10."

Fourth: A blue print showing four plan views and one end elevation, bearing words and figures "Southern Pacific Co.
809 "maintenance of Way Dept. Pacific System, San Fran. Feb. 14, 1894, and in the upper right-hand corner the letters and figures "M. W. 40. Feb. 1894, and the same is marked and identified as "Complainant's Exhibit No. 62, Sacramento Tie-Plate, Southern Pacific, G. R. Wilkins, Notary Public, 5/9/10."

Also a blue print showing a plan view and a sectional view marked in the upper right-hand corner "C. S. 23 and bearing the date December, 1904, and the same is marked and identified as "Complainant's Exhibit No. 63, Wallace Blue Print, Last Sacramento Southern Pacific Tie-Plate, G. R. Wilkins, Notary Public, 5/9/10."

Also a blue print showing a plan and a sectional view marked in the upper right-hand corner "C. S. 23 A" and bearing in the lower right-hand corner words and figures as follows: "Common Standard Tie-Plate for 80 lb. rail A. S. C. E. Sec. and 75 lb. rail C. S. Sec. for use on main line intermediate ties adopted April, 1905. Revised as to title and information Sept. 1905, and the same is marked and identified as "Complainant's Exhibit No. 64, Wallace Blue Print, Harriman Standard Tie-Plate, G. R. Wilkins, Notary Public, 5/9/10."

Q. 9. Please look again at the first blue print that you have introduced and which is marked "Complainant's Exhibit No. 59," and state again how many of these plates were made and used at that time?

A. About four hundred of them.

Q. 10. They were put on the track and used, were they?

A. Yes.

Q. 11. And to your knowledge no others were made and used after that first one were there?

810 A. No.

Q. 12. Please look again at the second blue print introduced by you and marked "Complainant's Exhibit No. 60," and the fourth blue print introduced by you and marked "Complainant's Exhibit No. 62," which is known as the Sacramento plate, and state in what way the blue print shown in "Exhibit 60" differs from the Sacramento plate in "Exhibit 62."

A. The plate shown on blue print known as "Exhibit 62" is two inches less in length, half inch less in width, it is three-eighths of an

inch thick at its thickest point as against seven-sixteenths of an inch in thickness, is nineteen sixty-fourths of an inch thick at the point where it begins to taper to the outer edge as against three-eighths of an inch thickness at the same point in "Exhibit 60." Those are the salient features.

Q. 13. Then the two plates shown on "Exhibits 60 and 62" are of the same configuration or design, but differ from each other only in dimensions, is that correct?

A. Yes.

Q. 14. And which is the heavier of the two plates, that on "Exhibit 60" or "Exhibit 62?"

A. That shown in "Exhibit 60," will weigh the most. It will weigh about eight and a quarter pounds. That shown in 62 about five and a half pounds.

Q. 15. Please point out the differences in design, if any, and in dimensions, between the plate shown in "Complainant's Exhibit No. 63" and the two Sacramento plates shown in "Exhibits 60 and 62."

A. The design shown in "Exhibit 63" is eight and a half inches long by eight inches wide, a reduction of half an inch in length, an increase of half an inch in width as compared with "Exhibit 62."

It is seven-sixteenths of an inch thick for that portion under
811 the rail, this thickness being uniform, for the width of the rail instead of decreasing as in the first two. In other respects the plate is similar. This plate weighs about seven and a quarter pounds, being therefore heavier than in "Exhibit 62," though still somewhat lighter than that shown in "Exhibit 60."

Q. 16. Were there many tie-plates made and used of the Channel type shown in "Complainant's Exhibit 61?

A. There were a good many, but I am unable to say how many.

Q. 17. Were the Channel tie-plates in this "Exhibit 61" ever adopted as a standard on the Southern Pacific?

A. No, not as the term standard is understood by me.

Q. 18. You referred in your answer to Q. 8 to the drawing of a tie-plate of which you have not produced a copy, but which you stated was altered into the form shown on the blue print C. S. "Complainant's Exhibit No. 63." What was the design or configuration of that tie-plate?

A. It had two grooves in the upper part running across the plate and lengthwise with the rail. These grooves were about an inch wide at the bottom, a vertical side at one end and curved or sloped upward at the other end in that respect differing from the form of the grooves in the tie-plate finally adopted in which both sides of the grooves are vertical. As nearly as I recollect the grooves had the same general dimensions.

Q. 19. And in changing that drawing into the drawing of the blue print that you have in your hand, "Exhibit No. 63," what change or alteration was made?

A. The lines indicating the grooves were rubbed out and the full lines indicating the surface of the plate was drawn straight across. The shading was filled in.

Q. 20. Do you happen to know what became of the blue prints

THE SOUTHERN PACIFIC FLAT-BOTTOM TIEPLATE.

In Bulletin No. 50 of Bureau of Forestry, United States Department of Agriculture, the question of tieplates is discussed and several forms of flat-bottom tieplates used in this country and Europe are illustrated, amongst them the flat-bottom tieplate used by the Southern Pacific Company. This company has recently designed and is preparing to use a modified form of this plate, shown in Fig. 1. The data used herein were furnished by Mr. J. H. Wallace, engineer maintenance of way.

The Southern Pacific Company on their Pacific System

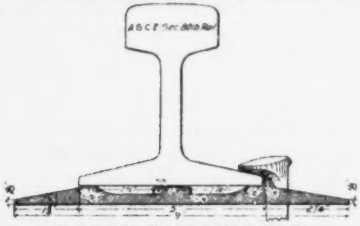


FIG. 1. SOUTHERN PACIFIC FLAT BOTTOM TIE PLATE.

use large numbers of redwood ties. As is well known, redwood is a most durable timber, resisting decay in a remarkable degree but is very soft and when used for ties is very rapidly cut by the rail-base. In order to get the full benefit of the decay-resisting qualities of redwood ties, the Southern Pacific Company were early led to experiment with various forms of tieplates. After a number of experiments, the plate shown in Fig. 2 was designed and arrangements made to roll them at the company's shops at Sacramento, Cal. During the

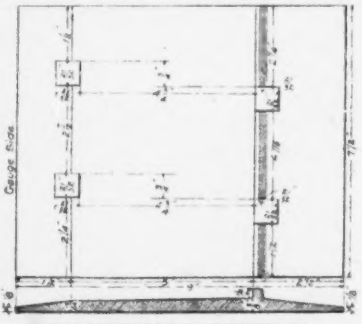


FIG. 2. SOUTHERN PACIFIC FLAT BOTTOM TIE PLATE.

past 13 years large numbers of them have been put into use.

As a result of their experience they have redesigned the plate as here illustrated in Fig. 1. To meet the increased wheel loads the thickness has been slightly increased. To decrease the weight of the plate recesses are made in the upper surface, which not only serve to lessen the weight, but form receptacles for the accumulation of sand which would otherwise lodge between rail and plate and cause wear of the metal surfaces. As shown in the engraving the plate is 9 inches long, measured across the rail, and in width will cor-

dth of the tie used, being 9 inches for
ches for an 8-inch tie

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

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THE RAILROAD SUPPLY COMPANY, Complainant, vs. THE HART STEEL COMPANY, and GUILFORD S. WOOD, Defendant. } In Chancery No.29,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

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THE RAILROAD SUPPLY COMPANY, Complainant vs. THE ELYRIA IRON AND STEEL COMPANY, Defendant. } In Chancery No. 7,668.

"Complainant's Exhibit Number 65 Railway Age Article, September 16, 1904, Reproducing Wallace First Drawing of Harriman Plate".

5/9/10.. E B Wilkins
Notary Public.

812 that were taken from this drawing before it was altered so as to form this blue print marked "Exhibit No. 63"?

A. There were a very few made. One at least was sent to Mr. Kruttschnitt, one was kept in my files and one in the General Manager's files. Whether any more were made I do not know.

Q. 21. Do you remember whether or not any reproduction of that particular drawing before it was altered into the form shown in "Exhibit No. 63" was printed in any publication?

A. The Railway Age. I think I stated in my previous answer that Mr. Kruttschnitt asked that the drawing be sent him, for publication. I intended to.

Q. 22. I show you a clipping purporting to be taken from the Railway Age of the issue of September 16, 1904, containing two figures of drawing and some text descriptive thereof which I ask you to look at and state whether you can identify it or not and if so state what it is?

A. Yes. I should say that was the plate as originally designed. This drawing was made from my drawing, the section of the rail and spike being added. The text as I read it over seems very familiar and to the best of my knowledge and belief is just as I wrote it.

Q. 23. Did you at any time see that article in the Railway Age?

A. I did.

Col. Brown: The clipping from the Railway Age identified by the witness is here introduced in evidence and marked "Complainant's Exhibit No. 65, Railway Age Article, September 16, 1904, Reproducing Wallace First Drawing of Harriman Plate, G. R. Wilkins, Notary Public, 5/9/10."

(Here follows diagram marked pages 813 and 814.)

Q. 24. This was the form of plate, was it, that you were
815 notified by Mr. Kruittschnitt was an infringement of the Wolhaupter patent?

Mr. Reed: Objected to as calling for secondary evidence.

A. It was. I would like to make a correction. You asked me what change was made on the original drawing to produce the one marked "Exhibit 63." In the drawing in the Railway Age, "Exhibit 65," I note that the width of the plate is nine inches whereas the width of that shown in "Exhibit 63" is eight and a half inches. So there must have been other changes than mere drawing the lines and rubbing out certain lines as I have described. My memory was at fault a little.

Q. 25. Do you recall attending a meeting of officials of the Harriman System at Chicago in September, 1904, at which Mr. Kruttschnitt presided?

A. Yes, I attended that meeting.

Q. 26. Do you recall whether or not at that meeting you recommended the adoption of any particular style or design of tie-plate, and if so what design?

A. I must have had, I am quite sure that I had copies of that blue print from which the Railway Age drawing was made with me at the meeting, and submitted them for adoption as common standards.

Q. 27. And do you know whether or not the design of the blue print from which this Railway Age article "Exhibit 65," was taken, was so adopted at that time?

A. It was not formally adopted. The fact is the adoption of standards was not made by the engineers. The final adoption of the standard was by the concurrence of the General Managers. I believe all the Engineers present favored the adoption of that plate as standard.

Q. 28. You mean the plate shown in "Exhibit 65," Railway Age Article?

816 A. Yes.

Q. 29. Can you fix the date when the drawing showing the design of "Complainant's Exhibit 65," was made by you?

A. I think it must have been in August judging from the date on which it was published.

Q. 30. You mean August, 1904?

A. August, 1904.

Q. 31. Do you recall anything being said or any discussion had at the meeting of the Engineers in September, 1904, about the lightening of the so-called heavy Sacramento plate by making on the under surface thereof alternate depressions similar to checker board arrangement?

Mr. Reed: Objected to as hearsay and irrelevant and not rebuttal testimony.

A. There was practically no discussion at the meeting and I am quite sure the question of lightening the plate did not come up.

Q. 32. Do you recall discussing with either Mr. Kruttschnitt or Mr. Isaacs at any time the question of lightening the heavier Sacramento plate by means of checker-board arrangement of depression in the under surface of the plate?

Mr. Reed: The same objections.

A. After we had been notified of the fact that the tie-plate as designed infringed on the Wolhaupter patent Mr. Isaacs and myself did discuss different ways of lightening the plate and depressions in checker-board form was one of the schemes suggested. As we expected to roll these plates at our rolling mill at Sacramento we were obliged to conform in the design with the capabilities of the mill. We understood from the mill men that there was difficulty in rolling plates of that design.

Mr. Reed: The statement "After we had been notified" is
817 objected to as not responsive, irrelevant, not rebuttal and secondary evidence.

Recess until 10 o'clock, Tuesday, May 10, 1910.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, May 10, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

Q. 33. It is in evidence, Mr. Wallace, that the defendant's witness, W. B. Story, Jr., Engineer of the Santa Fe System, took up the question of the study of the design of tie-plate to be used by the Santa Fe Road after his arrival in Chicago as Mr. Dunn's successor and as he says, in his answer to Q. 42, "Somewhere between 1906 and early in 1908," and after detailing in his answer to Q. 48 some of his work in this regard, and as he said in Q. 52 made many sketches and plans and many calculations and figures, etc., relating thereto, he stated in answer to Q. 62 as follows:

"A. I had practically completed the design about the middle of 1908. At that time Mr. Faulkner returned from a trip he had been making in the interest of the company and I showed him what I had in mind, which did not include ribs on the bottom of the plate. Mr. Faulkner suggested that he believed ribs at right angles to the track would be a distinct advantage, and I then went into a very careful investigation of the subject from that point of view, and added these ribs at his suggestion and after reaching the conclusion myself that they were necessary and would better the plate."

And then after being shown the blue print drawings, "Exhibits P & Q" offered by the defendant in evidence, Mr. Story stated in answer to Q. 65 that they represented: "the results of my study and investigation and are designed for the various sizes of rails,
818 there being a difference in dimension in the lighter rails from the dimensions of those for the heavier rails."

I now ask you to look at the blue print offered by defendant as

"Exhibit Q" and call to your attention particularly the plan view and sectional view on the right-hand portion of this blue print illustrating the plate by the figures and letters A-08, and also look at "Complainant's Exhibit 64, Wallace Blue Print Harriman Standard Tie-Plate," and bearing in mind that Mr. Story has testified that the ribs shown in his blue print were placed there at the suggestion of Mr. Faulkner, I ask you to compare these two drawings and state wherein the blue print of the defendant shows a tie-plate different from, if it does, the Harriman Standard Tie-Plate on "Exhibit No. 64"?

A. Except for the ribs on the bottom of the plate there is no essential difference in design, the differences being altogether in the dimensions. In size the plate is nine by seven and a half, the same as the original Sacramento plate. The Harriman plate shown in "Exhibit 64," is eight and a half by eight inches. Mr. Story's plate is a little thicker, the grooves a little wider but no other practical difference.

Q. 34. You have spoken in your deposition of Wolhaupter plates used on the Southern Pacific. Please look at the blue print which I now show you and which seems to bear your name in fac simile in the upper right-hand corner and state what this blue print is if you can identify it?

A. This is a blue print gotten out in my office at or about the time we began purchasing Wolhaupter plates, and was intended to show particularly the position of the spike holes. The section was drawn from a sample Wolhaupter plate which we had in the office.

(Here follows diagram marked pages 819 and 820.)

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF ILLINOIS.

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THE RAILROAD SUPPLY CO.
vs.) No.
THE HART STEEL COMPANY) 29,294.
and GUILFORD S. WOOD)

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF OHIO.

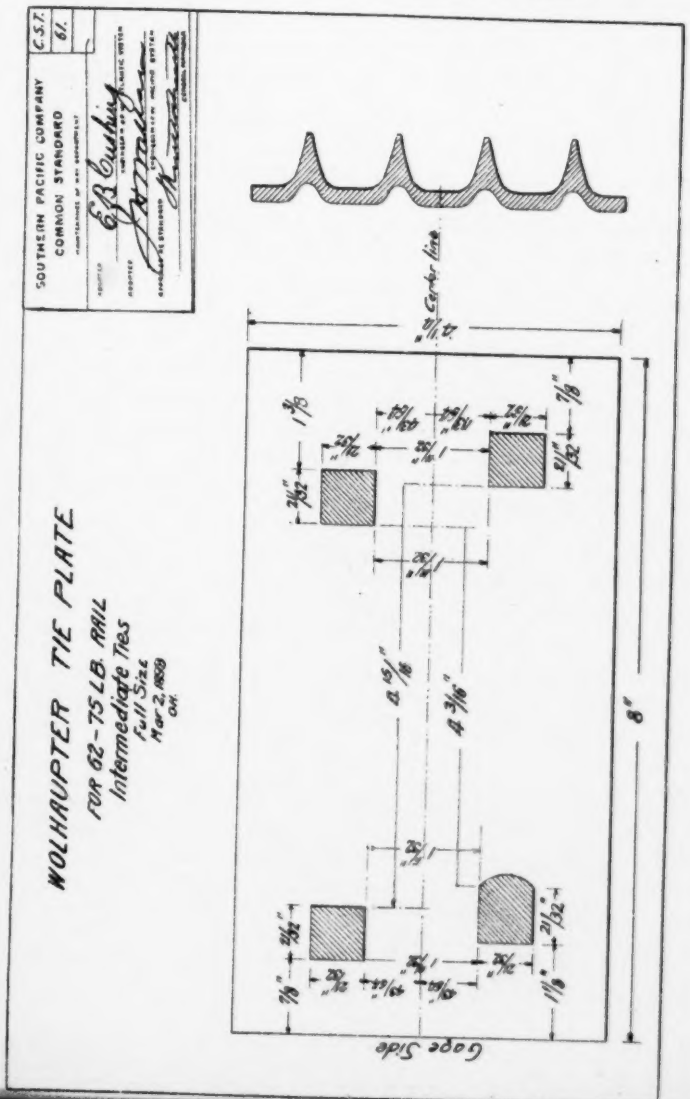
---o0o---

THE RAILROAD SUPPLY CO.
vs.) No.
THE ELYRIA IRON AND) 7,668.
STEEL COMPANY)

"Complainant's Exhibit No. 66, Wallace So.Pac.Ry.Blue Print, Wolhaupter Tie Plate."

8/10/10.

E. R. Wilkins
Notary Public.



Col. Brown: The letters and facsimile signatures on the
821 right-hand upper corner of this blue print are what, and indicate what?

A. Southern Pacific Company, Common Standard Maintenance of Way Department, adopted E. B. Cushion, Engineer M. & W. Atlantic System, adopted J. H. Wallace, Engineer M. of W. Pacific System, approved as "Standard" by J. Kruttschnitt, General Manager, in the upper right-hand corner the letters C. S. P. and below them the figures 61. This indicated that the drawing showed a common standard tie-plate for use on both Atlantic and Pacific Systems of the Southern Pacific Company. The date on the drawing is March 2, 1898.

Q. 35. And were tie-plates like this drawing of March 2, 1898, purchased and used on the Southern Pacific System?

A. Yes.

Q. 36. And in considerable quantities or not?

A. In very large quantities.

Q. 37. And did the purchase of such tie-plates extend over a period of years?

A. I think purchases of those plates were principally in the year 1898. I don't think there were many bought after that.

Col. Brown: The blue print identified by the witness is offered in evidence and marked "Complainant's Exhibit No. 66, Wallace So. Pac. Ry. Blue Print, Wolhaupter Tie-Plate," G. R. Wilkins, Notary Public, 5/10/10.

Q. 38. Please look at the tie-plate which I hand to you and state how this compares with the Wolhaupter tie-plates that were purchased for and used on the Southern Pacific Road in very large quantities as you have said?

A. This I should say is an exact reproduction of the tie-plate as shown on the drawing "Exhibit No. 66," and as used by the
822 Southern Pacific Co. This particular plate, as well as the drawing, shows the punching to fit our 62 lb. and 75 lb. rail. Other drawings were prepared similar to this except that the punching was shown to fit other weights of rails.

Col. Brown: The tie-plate identified by the witness is offered in evidence and marked "Complainant's Exhibit No. 67, Early Commercial Form Wolhaupter Tie-Plate," G. R. Wilkins, Notary Public, 5/10/10.

Q. 39. How long, would you say, did these early Wolhaupter tie-plates, which you have just identified remain in use in track in the Southern Pacific System?

A. A very large number of them was still in use when I left the service of the Company, in 1908.

Q. 40. In your answer to Q. 8 yesterday afternoon, after stating that your Company had used other plates than the Sacramento and the Wolhaupter, you stated "these plates, the Servis, the Wolhaupter, Q. & W. and Glendon all proved to be too weak as a large number

of failures were reported." Just what did you mean by that statement in connection with the Wolhaupter plate, for instance?

A. They buckled or were bent under the edges of the rail and the outer ends curled up.

Q. 41. And why was this?

A. On account of the very heavy wheel loads and lack of sufficient metal in the plate to withstand the bending strain exerted through the rail bearing by the heavy wheel loads. No doubt the softness of the ties on which they were placed had something to do with it. In other words, the ties being soft had a greater tendency to yield than would a hard wood tie.

Q. 42. And this tendency to yield would be greater I
823 suppose under that portion of the plate directly under the rail than at the ends.

A. It would because that point is subjected to the heaviest strain.

Q. 43. As an engineer, what in your opinion would have been the result of the same heavy wheel loads had the Wolhaupter plates of the same design that were used been made of sufficiently heavy metal and been used on the same soft wood ties? Do you think they would have buckled or curled up at the ends as did the lighter metal plates?

Mr. Reed: Objected to as containing an answer in itself, and as suggestive.

A. No, they were not.

Q. 44. I think it has been stated in the evidence of Mr. Isaacs adduced on behalf of defendant, that these Wolhaupter plates were "abandoned" by the Southern Pacific Company. State the facts in this particular.

A. The use was not abandoned although purchases practically ceased. To the best of my recollection this drawing, "Exhibit 66," remained as common standard for a number of years. Other drawings were prepared showing the Glendon plates, the Q. & W. plates, and my recollection now is that the choice of the particular kind of plate purchased was left to the purchasing department, leaving them free to take advantage of competition.

Q. 45. Please look at the Wolhaupter plate which I now hand you and state whether or not, in your opinion, had this plate been used on the soft-wood ties of the Southern Pacific Road under the same conditions as were the earlier Wolhaupter plates what would have been the result so far as buckling or turning up at the ends is concerned.

824 Mr. Reed: Objected to as hypothetical, irrelevant, immaterial and not rebuttal.

A. I think that plate would stand it all right.

Col. Brown: The plate is offered in evidence and marked "Complainant's Exhibit 68, Modern Commercial Form Wolhaupter Tie-Plate," G. R. Wilkins, Notary Public, 5/10/10.

Q. 46. I notice that the plate "Exhibit 67, Early Commercial

Form Wolhaupter Tie-Plate," is much narrower than the plate last shown you, "Exhibit 68," and the four flanges on the under side are longer and closer together than are the flanges and ribs on the bottom of the modern form of plate. State, if you please, whether or not the early form of Wolhaupter plate was criticised by you with respect to these under flanges and if so, whether or not the later plate would be subject to the same criticism?

Mr. Reed: The same objection.

A. The original commercial form of Wolhaupter plate, "Exhibit 67," was difficult to seat properly on the tie. The form and depth of the flanges prevented it from being forced completely down on the tie when first applied. This was a fault but not a particularly serious one. The modern form of tie-plate with the inner flanges much shallower with a very different form or shape between the flanges should be more easily applied or forced into the tie.

Q. 47. Do you remember the weight of the Wolhaupter early commercial form of tie-plate?

A. I do not.

Q. 48. Please look at the tie-plate which I now hand to you and state what this model represents?

A. That represents the Sacramento tie-plate.

Col. Brown: The plate is offered in evidence as "Complain-
825 ant's Exhibit 69, Model Sacramento Tie-Plate," G. R. Wilkins, Notary Public, 5/10/10.

Q. 49. What was the relative weight of the early or commercial form of Wolhaupter tie-plate as compared with the Sacramento tie-plate?

A. It was very much lighter.

Q. 50. And how do these two tie-plates compare as to dimensions?

A. The Sacramento plate is very much larger, being nine by seven and a half, and the Wolhaupter is four and a quarter by eight.

Q. 51. What was the purpose that you had in mind in placing the two grooves in the top surface of the tie-plates as shown on the drawing that was reproduced in the Railway Age, "Complainant's Exhibit No. 65," and which you say was submitted to the meeting of Engineers in September, 1904?

A. They had the double purpose of lightening the plate and at the same time formed a receptacle for sand or grit which might be blown or otherwise get under the rail and if not removed assist in wearing out the plate.

Q. 52. I take it then that that is what you have in mind in using the following sentence in the Railway Age article:

"To decrease the weight of the plate, recesses are made in the upper surface, which not only serve to lessen the weight, but form receptacles for the accumulation of sand which would otherwise lodge between the rail and plate and cause wear of the metal surfaces,"

was it?

A. It was.

Q. 53. I believed Mr. Story, witness for the defendant, has in effect stated that there is nothing in this theory of sand grooves avoiding wear of the metal surfaces, and that the recesses in the
826 upper surface of the tie-plate are solely for the purpose of reducing the weight. You evidently do not agree with him in his conclusion do you?

A. I do not.

Q. 54. In your experience with rails state whether or not you have found them turned out from the mill uniformly with a few flat bearing surfaces underneath the rail flanges?

A. The old rails were nearly always slightly convex on the bottom, either due to deformation in shrinkage or to the way in which the rolls were set. This is rarely if ever noticed in the rails rolled at present.

Q. 55. State whether or not you ever saw on the Southern Pacific System, or elsewhere, in use in track, a tie-plate such as is illustrated in the blue print marked "Defendant's Exhibit DD, the Goldie tie-plate"?

A. I don't remember of ever seeing them in use.

Q. 56. Mr. Wallace, please give us, for the benefit of the Court, a definition of a rail chair or cradle, then a definition of a rail-joint and then a definition of a tie-plate, using such technical phrases as you find necessary for accuracy, but making your definition as graphic as possible for the benefit of the non-technical court?

Mr. Cooke: The question is objected to as not properly rebuttal and further that the witness has not as yet shown his qualification to testify to the use of rail-chairs and rail-joints.

A. A rail-chair is a support for the rail. In the early days of railroading the rails were very different in shape from those now used. Pear-shaped or double headed rails was in common use in this country and in Europe. These rails, as their name indicates, did not have the flat bottom flange or base, hence it was necessary to support them in a chair usually made of cast-iron properly shaped to receive the rail, wedges usually of wood being
827 driven in to hold the rail firmly in the chair. The chair was secured to the tie by spikes or wooden trenails. After the form of the rail was changed and the Roads began to use what is known as a T-rail, or rail with a flat bottom, many Roads still continued to use the chair.

The term joint is used to indicate the connection between two adjacent rails to secure them in line and as far as possible in surface. When the pear-shaped or double headed rail is used the joint is made in a chair similar in form to the chair used on intermediate ties. When the form of the rail was changed to that of the T-rail, the first forms rolled were of such shape that fish plates could not make a good joint, and chairs were still used to assist the fish plates in supporting the joints. Later on the form of the rail was changed so that a larger and better form of fish plate could be used and the

use of chairs was discontinued. Later the angle-bars now in some form or another in general use as a rail-joint were introduced.

Before the introduction of the modern angle-plate joint there were a number of joints designed and placed on the market most of which combined fish-plates with a base support in the shape of a lengthened chair made long enough to reach over two ties.

A tie-plate is a device intended to protect the tie from the cutting action of the rail and thus prolong its life.

Q. 57. Mr. Wallace, please look at "Defendant's Exhibit AA," being a blue print reproduction from the Railroad Gazette, and look at the upper left-hand figure showing a section of a rail and an end view of rail-chair and state, if you please, what is indicated by the dotted lines that you find in the center of this figure immediately underneath the base of the rail?

Mr. Cook: Same objection repeated, and further witness
828 has not yet shown he has been accustomed to reading mechanical drawings, making the same, or any qualifications of this character.

A. The dotted lines indicate that in making the plate certain portions of the metal were left out, in other words there is a groove or recess in the upper surface of the plate.

Q. 58. Did you understand from that figure of the drawing and those dotted lines that the recess should extend from side margin to side margin of that plate?

A. I would not so understand it.

Q. 59. Please look at the illustration or figure immediately below the one you have just been considering, which is a plan view looking down on top of the same device shown in the first figure and state if you find on that second figure any dotted lines that indicate the contour of the same recess which you say is indicated by the dotted lines in the upper figure?

Mr. Cooke: Same objection.

A. There are dotted lines in the plan view referred to which indicate the limits of the groove or recess indicated in the upper drawing.

Q. 60. Please take a pen and indicate in ink by the reference letter *a* and the line leading therefrom these two dotted lines.

A. I have.

Q. 61. Please look at the blue print marked "Defendant's Exhibit LLL" and look at the lower figure over which is placed the numerals 662 and state whether or not the rail-chair there illustrated is shown in sectional or in end elevation?

A. It is a sectional elevation.

Q. 62. Please look at the upper figure 661. Is that a sectional or end elevation?

A. It is an end elevation.

829 Q. 63. State what you understand to be indicated by the dotted lines in Figure 661 to which the reference letters *a a* are applied?

A. These indicate recesses in the bottom of the chair of the lateral dimensions shown. Without plan view the drawing is not complete. In other words the patternmaker would be unable to make a pattern from that drawing without a plan drawing.

Recess.

Direct examination closed.

Cross-examination by Mr. Reed:

X Q. 64. While this experiment was going on by the Southern Pacific System by the Road Masters in reference to tie-plate was there any investigation made of the tie-plates that were on the market at that time?

A. The first tie-plate I know of being on the market is the Servis.

X Q. 65. And when did you first get acquainted with that?

A. I couldn't fix the date now, probably about 1891 or '2. It may have been later. The experiments of the Road Masters were previous to that.

X Q. 66. And I suppose those experiments were rather limited in their scope?

A. Very much so. The Road Masters had no special authority. There was no attempt made to make any regular authorized experiments.

X Q. 67. Do you recall whether any of the designs suggested by the Road Masters were manufactured to any extent?

A. They were not.

X Q. 68. Who suggested the plate shown by "Exhibit 59"?

830 A. To the best of my recollection it was my own suggestion.

X Q. 69. That was perfectly flat on the top and turned down at the edges so that the edges clamped over the sides of the tie?

A. Yes, sir.

X Q. 70. Where were the four hundred plates of this kind that you spoke of installed, on tangent or curved track?

A. I think they were on tangent.

X Q. 71. But during the interim shown by "Exhibits 59 and 60," or rather by the dates when they were designed, was there any use experimental or otherwise of other tie-plates than these formed?

A. There were not.

X Q. 72. To what extent was there any use, experimental or otherwise, of the form shown by "Exhibit 60," before the Road began to use it in quantities?

A. We had the rolls prepared and commenced using them in large quantities at once.

X Q. 73. That is you began using them in large quantities immediately after the date of the designing, May 7, 1891?

A. As soon after that as the rolls were ready for use, it may have been several months

X Q. 74. And then I understand those plates were made at the mill owned by the Southern Pacific System at Sacramento?

A. Yes.

X Q. 75. And except as to changes in dimensions, that plate continued until about 1892 to be the only plate that was being installed on the System?

A. That is so.

X Q. 76. During this year can you give us any idea as to the extent to which this plate was installed?

831 A. I don't recollect but I should think not less than a hundred thousand.

X Q. 77. In April, 1892, the plate "Exhibit 61," was gotten up by you. This plate "Exhibit 61," was perfectly flat on top?

A. It was.

X Q. 78. And it differed from the plate "Exhibit 59," in being slightly narrowed and having the edges sharpened so as to penetrate the tie instead of clamping over the edges of the tie?

A. Yes.

X Q. 79. At the time of designing "Exhibit 61," had you seen any other tie-plate than those which you have described?

A. I think very likely I had seen the Servis advertised at least, but of that I am not sure.

X Q. 80. Of course these flanges on "Exhibit 61," entered the tie parallel to the grain of the wood?

A. They did, but on account of the width of the plate and as the tie we were then using was eight inches wide, they in fact split off the corner instead of entering the wood. They therefore in effect clamped the tie as did the tie-plate shown in "Exhibit 59," but much tighter or firmer.

X Q. 81. About how deep were the flanges?

A. Shown in the drawings as eleven-sixteenths of an inch measured from the bottom of the plate?

X Q. —. And to what extent were they installed?

A. They were designed particularly for use with screw spikes. We only continued the use of these a short time, possibly a year and in that time I suppose from seventy-five to a hundred thousand were made and used.

X Q. 83. In the interim between the designing of "61 and 63 Exhibits," did you make any further investigation or work

832 upon tie-plates except those which were embodied in "62 Exhibit"?

A. During that time we were purchasing large quantities of tie-plates, Servis, Wolhaupter, Q & W and Glendon, small quantities of other plates.

X Q. 84. Well, were you investigating or experimenting during this period with the idea of bringing out a tie-plate of your own?

A. No.

X Q. 85. Then your personal work in this direction stopped with the revision of the Sacramento plate which is shown by "Exhibit 62," in February, 1894, until you took it up again in 1904?

A. So far as the question of designing a plate was concerned, although we continued in all these years to use the Sacramento plate as well as the other plates I have mentioned, I gave personal attention with the result obtained by their use.

X Q. 86. That is during the period from April 1, 1892, when you brought out the Channel plate "Exhibit No. 61," until 1904 you were watching the results from the use of different plates but not attempting to devise one of your own?

A. Yes.

X Q. 87. How long did the System continue to install the Channel plates after it was suggested by you?

A. Only during the time we used screw spikes, probably extending over a year, during which time as I have said we must have used seventy-five to a hundred thousand. After that we stopped making them. The rolls were changed and used for making other channel bars.

X Q. 88. Now which of the outside plates was first purchased and installed on the System?

A. The Servis.

833 X Q. 89. And have you any way of fixing the approximate date when the Servis plate was first used?

A. No, I haven't, except that it was previous to 1895.

X Q. 90. And have you a drawing or blue print of the Servis plate as used?

A. No, I have not.

X Q. 91. Please give us the best description you can of it?

A. The first Servis plate was flat on top, flange on each edge. Later a third flange was made in the middle making three flanges. The flanges entered the ties parallel with the grain of the wood. Were approximately half an inch or five-eighths of an inch deep. The plates as I remember were about four inches wide by eight inches long. They were very thin and I think possibly three sixteenths of an inch or less.

X Q. 92. And how long did the System continue to purchase Servis plates and install them?

A. They continued to use and purchase them until the Wolhaupter plate was placed on the market. I think that was in '99 or '98. '98 I think it was.

X Q. 93. And could you tell us of the number of Servis plates that were purchased and installed in the aggregate or yearly?

A. I could not give you any idea, I suppose there was a million or more.

X Q. 94. And the next plate installed after the Servis plate had begun to be installed?

A. The Wolhaupter was the next plate.

X Q. 95. And I understand that while you were installing the Servis plate you were also installing the Sacramento plate?

A. Yes.

834 X Q. 96. You began installation of the Wolhaupter plate in '98 or '99 and continued to install it for about a year I understand?

A. Yes.

X Q. 97. And during that period about how many Wolhaupter plates were installed?

A. During the year 1898 we purchased several millions of them,

but they were not all installed that year. A good many of them were carried over and put in the following year.

X Q. 98. The trouble with the Servis plate was that it buckled?

A. Yes, it buckled.

X Q. 99. Was there any difficulty in seating the Servis plate?

A. No particular difficulty.

X Q. 100. The Wolhaupter plates purchased and installed were heavier than the Servis plates, were they not?

A. Yes, they were.

X Q. 101. They were larger in area and thicker and stronger in every way, I take it?

A. Yes, they were stronger, had a better distribution of metal which made them stronger.

X Q. 102. Was there any difficulty with the Servis plates on account of splitting or injuring the ties?

A. When they began to buckle they were rapidly pounded into the tie by passing of trains, and the result was the splitting and injuring of the ties.

X Q. 103. Was the purchase of the Servis plates as extensive as the Wolhaupter?

A. No.

X Q. 104. What was the next plate purchased and installed after the Wolhaupter?

A. The Q & W and the Glendon. My recollection is that
835 they were both brought out about the same time and used about the same time.

X Q. 105. And you began the installation of these about 1899?

A. Yes, sir.

X Q. 106. And their purchase and installation, that is the Glendon and Q & W, succeeded the Wolhaupter?

A. Yes.

X Q. 107. Were the Q & W and Glendon heavier plates than the Wolhaupter?

A. They were about the same weight.

X Q. 108. And if you have not blue prints or drawings of either of these type of plates I wish you would be kind enough to describe them as you did the Servis a short time ago.

A. The Q & W plates had two outside flanges along the outer edge of the plates and two inside flanges. I think some of them were only made with one inside flange. These flanges, as in the case of the Servis plate, entered the tie parallel with the grain. The upper surface had grooves over the inside flanges. If my memory is correct the plates were a little wider than the Wolhaupter plate. The Glendon plate is similar to the Q & W in the position of the flanges, the principal difference being, as I recall it, in the position and the shape of the grooves. The grooves were between the flanges instead of directly over them, the flanges of these plates entering parallel with the grain.

X Q. 109. Did all of these plates that you have thus described, except the Sacramento plate, have no shoulder on the under surface?

A. The Sacramento plate was the only plate having a shoulder as described.

X Q. 110. And in all of the plates that had grooved
836 tops the grooves ran parallel on the tie and extended clear across the upper surface.

A. Yes, in the direction of the length of the tie, right angles to the rail.

X Q. 111. Was there any difficulty in seating the Q & W and Glendon plates?

A. No, no more than there was with the Servis. They could generally be forced down with a maul.

X Q. 112. And did the Wolhaupter, Q & W or Glendon plates split or disintegrate the tie the same way the Servis did?

A. When they buckled there was the same destructive effect on the tie.

X Q. 113. And when you left the Road in 1908 were some of these old plates, Servis, Wolhaupter, Q & W and Glendon still in use?

A. Yes, on some of the branch lines and side tracks.

X Q. 114. And I suppose that all of these plates during this period were placed both on curved and straight tracks?

A. They were.

X Q. 115. What as to the old Sacramento plates that were installed in the early period, did they still remain in use when you severed your connection with the Road?

A. Yes, a great number of them.

X Q. 116. And I understand that from the time you began using the Sacramento plates up to 1904 the System kept installing the Sacramento plate?

A. They did. I don't think there was any year in which we did not roll plates of this kind at Sacramento and made use of them in track.

X Q. 117. So that the Sacramento plate was not, at any time, abandoned.

A. No. There were sometimes long periods when the rolling mill had to be used for other purposes and we could not secure any Sacramento plates.

837 X Q. 118. So that for the reason that the mill was otherwise employed largely the Sacramento plates were not put in when they otherwise would have been?

A. I think that is correct. To be positive on that point I would have to examine the records of the mill.

X Q. 119. But that is your best recollection and impression?

A. Yes.

X Q. 120. While you were connected with the System was there ever a Wolhaupter tie-plate used which had a shoulder on it?

A. No, to the best of my recollection.

X Q. 121. While you were connected with the Road was there ever a tie-plate used which had lower flanges crosswise with the tie and parallel to the rail?

A. Not in regular use. We used to have samples sent us of about every tie-plate anybody ever invented, and we generally sent them

out on the road with instructions to put them in and make use of them. I don't think we ever bought any.

X Q. 122. And do you recall the names, styles or date of any of these plates that were sent to the Road from time to time?

A. I remember the Goldie Claw plate, the Hart plate, the Diamond State. Some malleable iron plates. Those are the only ones the names of which I remember.

X Q. 123. Are you sure that there were not some purchases of the Hart or Diamond State plates?

A. Might have been some, but they must have been very small. I don't remember.

X Q. 124. What was the meaning or significance of the word Standard with the Road while you were connected with it? What was understood by this term?

A. A device or article designated as standard was authorized for use by the head of the department and subordinates under-
838 stood that such articles could be ordered by them and would in all likelihood be supplied.

X Q. 125. And were the Q & W and Glendon Standard at any time?

A. They were, in the same way as the Wolhaupter shown on that drawing, "Complainant's Exhibit 66."

X Q. 126. Well, when a device or an article ceased to be standard how is that indicated or announced?

A. It would be announced by notifying those interested it was no longer standard. They would then write "cancelled" across the drawing they had in their possession.

X Q. 127. Well, were the Servis, Wolhaupter, Q & W or Glendon ever cancelled this way, or did they ever cease to be standard?

A. No. They were still using them when I left although they had ceased purchasing them.

X Q. 128. That is the purchases of these four kinds of plates had stopped?

A. Yes.

X Q. 129. And the purchase of the Wolhaupter plate stopped in 1899?

A. I believe that was the date.

X Q. 130. It was in 1903 that the Sacramento plate was selected as the future standard?

A. In 1904.

X Q. 131. And at that time did the purchase of all the other kinds stop, practically?

A. Yes.

X Q. 132. And you were then called upon to suggest some improvement or modification of the Sacramento plate?

A. That was in 1904.

839 X Q. 133. And who made this request and what were the purposes suggested of the modifications?

A. I suggested to Mr. Kruttschnitt the advisability of adopting a flat bottom plate, with a rib on the upper surface such as our Sacramento plate for adoption as standard on the Harriman Lines. The

suggestion received his approval and I was instructed to submit a design for such plate.

X Q. 134. Your first suggestion was practically the old Sacramento plate, was it not?

A. The first drawing submitted was similar to the Sacramento plate with the addition of the grooves in the upper surface.

X Q. 135. And these grooves were two in number and ran clear across the upper surface of the plate, did they not?

A. They did.

X Q. 136. They were of course parallel to the rib or shoulder and crosswise of the tie; that is, the grooves?

A. Yes.

X Q. 137. And this idea of the grooves was your own suggestion, I take it?

A. It was.

X Q. 138. And could you give us the date when the plate with the two grooves on top was submitted by you any more definitely than you have done?

A. No, I cannot.

X Q. 139. I believed you fixed it about August, 1904?

A. I did.

X Q. 140. How was this submitted to Mr. Kruttschnitt, by letter or personal interview?

A. It was submitted to him by the General Manager of the Pacific System.

X Q. 141. And you had submitted it to the General Manager, I take it?

840 A. Yes.

X Q. 142. Please tell us how and where and in what manner you submitted the idea to the General Manager and who he was?

A. As I have already stated I discussed with Mr. Kruttschnitt the question of using a form of Sacramento plate as common standard on the Harriman Lines and was requested by him to prepare a design to be submitted for discussion at the next meeting of the engineers of the Harriman lines. Before this meeting took place and to the best of my recollection before the drawing was completed, the General Manager, then Mr. C. H. Markham, received a letter from Mr. Kruttschnitt in which he referred to the design I was to prepare and asked him to have it hurried up and blue-print sent him together with a description that he might have published in some of the technical papers. My recollection is that he said the Santa Fe was getting up a similar plate and he wanted to have the proposed Harriman plate described in print before that of the Santa Fe. Mr. Markham showed me the letter or sent it to me with the request that I furnish drawing and description asked for. I did so and the article in the Railway Age was the result.

X Q. 143. And the article in the Railway Age and the illustrations of it correctly exhibit your work, do they?

A. To the best of my recollection, yes.

X Q. 144. And you did this work in San Francisco?

A. Yes.

X Q. 145. And in getting up this design or form of tie-plate shown in the Railway Age did you receive any suggestion or help from any outside source?

A. Not that I can recall.

X Q. 146. So that the form of tie-plate shown in your drawing and represented by the article in the Railway Age was the work of yourself and the office?

841 A. Yes.

X Q. 147. What was the primary and principal office or function of the two grooves on the upper surface? It was to your mind, to lighten the plate, cheapen its construction without decreasing its strength, was it not?

A. The question of first cost was always the first consideration, hence the use of the grooves was considered most important in lightening the plate and decreasing its cost.

X Q. 148. Have you ever made any careful examination or test to ascertain whether the theory that the grooves on the upper surface of tie-plates by affording a place for the sand or dirt to get from under the rail materially or substantially prevent wearing of the plate has any foundation?

A. I have never made any tests but have had opportunity to observe the wear of tie-plates. That sand and grit does get under the rail and on the tie-plate I have frequently observed. That tie-plates, the base of the rail as well, is worn by such grit I have also observed. It stands to reason that the less grit is allowed to lodge on the plate the less will be the wear. On examining plates with grooves in service I have found a quantity of sand in the grooves where it could do no harm. My opinion that the grooves are of value in thus preventing a rapid wear of the plate has been formed from such observation.

X Q. 149. Did you ever observe a Sacramento plate, which I believe is flat as to its rail-bearing surface, on which you thought the plate had been materially worn or weakened by reason of the sand or grit between the rail and the surface of the plate?

A. I did not, but the Sacramento plate is very thick, the rate of abrasion is slow and does not show very readily. Our experience with the Sacramento plate led me to believe that if made a

842 little thicker they would last indefinitely. That is a great many years; and in designing it, the idea of the grooves to prevent wear, was not that they would prevent all the wear, but would considerably lengthen the life of the plate.

X Q. 150. The publication of this article in the Railway Age was prior to the meeting of Engineers, about a month or so was it not?

A. I think the meeting of the Engineers was in September, 1904, hence the publication was in advance of the meeting.

X Q. 151. Did you at that meeting discuss with anybody or hear any discussion of the question of lightening the tie-plates by means of depressions of checker-board form?

A. I don't remember of such a discussion.

X Q. 152. It is your recollection that there was no discussion of lightening tie-plates at all or in connection with it?

A. That's my recollection.

X Q. 153. But you do recall having a discussion with Mr. Isaacs in reference to this checker-board form of arrangement at some time, of course?

A. I do.

X Q. 154. Was the checker-board form of depression his suggestion? That is, the suggestion of Mr. Isaacs?

A. I think it was.

X Q. 155. Was this checker-board form of depression suggested by him for the upper or lower surface of the plate?

A. My recollection is that it was for the upper surface.

X Q. 156. And upon investigation it was found that it would be difficult at your mill at Sacramento to roll a plate of that configuration and so it was abandoned?

A. My recollection is that there was that objection to it.

843 X Q. 157. Do you remember whether the checker-board form as proposed was illustrated by any drawings by Mr. Isaacs or anybody?

A. Yes, there were drawings or sketches made showing this checker-board arrangement.

X Q. 158. Are you acquainted with Mr. Story, Engineer of the Santa Fe System?

A. Yes, I am.

X Q. 159. Did you ever discuss the question of tie-plates with Mr. Story?

A. I don't think I ever did.

X Q. 160. In this letter which Mr. Markham received you said there was some statement to the effect that the Santa Fe was getting up a tie-plate similar to the Sacramento plate. Could you give us any more extended or explicit account of what the letter said on that subject?

A. No, I cannot.

X Q. 161. The letter simply stated that the writer, who was Mr. Kruttschnitt, understood that the Santa Fe was getting up a tie-plate similar to the Sacramento plate?

A. Yes.

X Q. 162. Have you ever had any practical experience with the tie-plate marked "Complainant's Exhibit 68, Modern Commercial Form, Wolhaupter Tie-Plate"?

A. No.

X Q. 163. Have you ever seen a plate of that kind in track?

A. Not to know it.

X Q. 164. Then your expression of opinion as to the efficiency of the tie-plate in "Exhibit 68" is purely theoretical?

A. Not purely theoretical, it is the result of experience with other plates.

844 X Q. 165. But it is simply the application of your experience with other plates to this plate as it appears?

A. Yes.

X Q. 166. This form of plate which appears in Exhibits "60," "62" and "69" is still called the Sacramento plate, is it not?

A. Yes.

X Q. 167. Since what date have railroad rails been rolled so that the bottoms are flat and not slightly convex as in the olden days?

A. The change came about with improved methods of manufacture. The particular rails that I remember having a slightly convex base were rolled in the 70's and early 80's. They were fifty and sixty-pound rails in use on the Southern Pacific Lines. I don't remember when the rails with the perfectly flat bottom came in.

X Q. 168. But these rails of which you state are the only ones that you had in mind that exhibited the slightly convex bottoms?

A. They were.

X Q. 169. And with those exceptions the other rails that you have seen or noted have their bottoms flat?

A. The later rails, as far as I have observed, have a flat bottom.

X Q. 170. That is, the rails that you have seen since the early 80's have the flat bottoms?

A. I can't say as to that, there may have been some rolled later. I can't fix the date.

X Q. 171. But since some time in the 80's rails, so far as you have observed them, have had flat bottoms?

A. Yes.

X Q. 172. Railway chairs, railway joints and tie-plates are all devices for securing rigidity of alignment of rails and attaching them to the ties, are they not?

A. The railroad chair is. The railroad joint is for the
845 purpose of securing rigidity of alignment of the joints, but not particularly for securing it to the ties. The tie-plate is for the protection of the tie and has nothing to do with the rigidity of the rail or for securing it to the tie.

X Q. 173. What is the office or function of the rib or shoulder along the upper surface of the tie-plate?

A. To protect the spike from being worn or cut by the rail base and in this way prevent, by the shearing or breaking of the spike, the spreading of the track.

X Q. 174. Then the shoulder on the upper surface of the tie-plate operates to keep the rails in alignment and prevent them from spreading?

A. Yes.

X Q. 175. And what is the purpose or function of the lower flanges of the tie-plate?

A. The introduction of flanges on the tie plates entering the tie parallel with the grain is intended to secure the tie-plate to the tie to prevent it moving or vibrating on the surface of the tie as the wheels of the train pass over.

X Q. 176. That is the office or function of any projection on the lower surface of the plate that enters or engages the tie, is it not?

A. No, the projections on the bottom of the Santa Fe plate, "Defendant's Exhibit P," are intended to supplement the spike in

holding the rail in position in gauge. They would not hold the tie-plate as rigidly to the tie as the longitudinal flanges.

X Q. 177. But such projections as appear on the Santa Fe plate would tend to prevent lateral movement of the plate, that is, movement toward the outside or end of the tie, or so far as that goes in either direction along the tie, would they not?

A. They would.

X Q. 178. So that the effect of any projections in the
846 lower surface of the tie-plate which enters the tie or engages with it would be to prevent, to a greater or less degree, horizontal movement of the tie-plate?

A. It would.

X Q. 179. And this, of course, would tend to prevent the track from spreading and secure alignment of the rail?

A. It would as long as the spikes held.

X Q. 180. And there would be this tendency to secure alignment and prevent spreading whether the spikes were driven through punchings in the tie-plate without coming in contact with the rail base, or in contact with the rail base?

A. The tie-plate with the rib on it would tend to keep the rail in line and gage whether the spike was driven through the spike-hole or against the outer edge of the plate. This latter would be an impracticable way of using it, for the head of the spike engaging the rail base has to perform the duty of preventing the rail from turning over.

X Q. 181. The rail chairs frequently have broad surfaces on their bottom where they come in contact with the tie?

A. Yes.

X Q. 182. And a great many rail joints have broad surfaces on the bottoms where they rest on the tie?

A. They do.

X Q. 183. And do not these broad bottoms upon rail chairs and rail-joints perform the same functions in protecting the ties as the bottom surfaces of the tie-plates?

A. Where they are of greater area than the rail base they do afford some protection. The amount of protection would depend on the area of the joint or chair in contact with the tie.

X Q. 184. Then rail chairs and rail joints with bottoms
847 whose area is greater than the rail base serve to protect the ties in the same manner as tie-plates?

A. Yes.

X Q. 185. And tie-plates with shoulders or ribs on their upper surfaces tend to keep the rails in alignment and the tracks from spreading?

A. Yes, they tend to.

X Q. 186. And tie-plates with shoulders on the top and flanges on the bottom also have the same function and tend to keep the rails rigid and the tracks from spreading, do they not?

A. Yes, they do.

And thereupon an adjournment was taken until Wednesday, May 11, 1910, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, May 11, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

X Q. 187. I wish you would look at the drawings connected with the patent to J. E. Wooten, No. 66,487, July 2, 1867, and keeping in your mind your definition and idea with reference to railroad chairs, railroad joints and tie-plates, state what you think that device should be called without referring to or looking at the name which is given to the letters-patent.

Col. Brown: The question is objected to as not proper cross-examination.

A. Rail joint.

X Q. 188. This device also, as you view it, would perform the function of a tie-plate would it not?

Col. Brown: The same objection.

848 A. To the extent that the base plates of the joint cover a larger area than the rail base. It affords protection against rail wear.

X Q. 189. And would not the device also, in your judgment, perform the functions of a railroad chair?

A. In my judgment it is different from a chair inasmuch as the chairs were made for use on one tie, whereas this device spans the space between two ties. If the drawing is correct it will be noted that the base plate does not cover all of the tie, that is, it is not of sufficient length to reach completely over both ties. This very much reduces the area of the bearing surfaces.

X Q. 190. But still the device as shown would hold the rail in position by reason of the shoulders on the upper surface of the device.

Col. Brown: Same objection.

A. Yes, as with any joint.

X Q. 191. You will notice now that I have removed the paper that covered up the name on the page that the device is styled at the top of the drawing "Railroad Chair."

A. I notice.

X Q. 192. And in the letters-patent themselves, or rather, the specification attached, the device is styled "An Improved Rail Supporting Coupling" and further "Rail Coupling," and at the top of the specification "Improved Railway Chair," is it not?

Col. Brown: Same objection.

A. It is.

X Q. 193. What would you call a device shown in the letters-patent to W. F. Gould, No. 280,030, patented June 26, 1883, upon inspection of the drawings which I show you with the name covered up?

Col. Brown: Same objection.

A. I don't know without reading the specification, it might be most anything.

849 X Q. 194. It is styled "Railroad Rail Cushion and Joint." Do you think that is a proper name for it?

Col. Brown: Same objection.

A. A rose by any other name would smell as sweet. I venture to say none of them were ever used.

X Q. 195. Please look at Figures 5, 6, 7 and 8, shown in connection with the specification of letters-patent to P. C. Dockstader, No. 462,399, dated November 3, 1891, and tell me what you would call the device shown therein?

A. It is a chair.

X Q. 196. You notice that the name attached to the drawing is "Lockrail Joint," do you not?

Col. Brown: Same objection.

A. I do.

X Q. 197. Now, as a matter of fact, this device subserves or would subserve as a joint, a chair and a tie-plate, would it not?

A. I would like to say that, as I have already stated in my testimony, in the early days of railroading the rail was supported on every tie by means of a chair, and that the chair where the rails came together formed a joint. Later improved forms of joints were brought into use and the use of short chair joint was discontinued. In the absence of a better form of joint this chair could be used either intermediate or at the joint. When used at the joint it would be called a joint in the days when this type of fastening was in use. Having an area considerably greater than the rail base it would protect the rail from wear and to that extent perform the function of a tie-plate.

X Q. 198. What would you say was the proper name to be bestowed upon the device shown in the drawings in connection with letters-patent to F. W. Parsons, No. 465,492, dated December 22, 1891?

850 Col. Brown: Same objection.

A. I don't know what the inventor calls it, but if it was put on the market at the present time it would be called a tie-plate.

X Q. 199. As a matter of fact it is styled at the head of the drawings and the specifications "Railway Chair" and in the specifications themselves "A New and Useful Improvement in Railway Plates" and in the claims "A Railway Chair," is it not?

Col. Brown: Same objection.

A. Yes.

X Q. 200. Take the device shown in the drawings attached to letters-patent to J. T. Richie, No. 584,603, dated June 15, 1897, and tell us what name you would bestow upon that device.

Col. Brown: Same objection.

A. It is a tie-plate.

X Q. 201. It is styled at the top of the drawing and specifications "Railroad Chair or Tie Plate" and in the specifications "Improvement in Railroad Chairs or Tie Plates" and "Chair or Ties" is it not?

Col. Brown: Same objection.

A. Yes.

X Q. 202. And in the claims it is styled "A Railroad Chair" in the first line, and "said chair for spiking respectively the rail, chair and tie, and the chair and tie," is it not?

A. It is.

X Q. 203. While we have had your evidence to some extent on the subject, I don't think it has been brought out clearly and in close connection as to the relative weight and strength of the different tie-plates used on the Southern Pacific System. Please state the relative strength and weight of the Sacramento plates first
851 used, the Servis plate, the Wolhaupter plate, the Q. & W. plate, the Glendon plate and the Sacramento plate last used.

A. The first Sacramento plate, that shown in "Exhibit No. 60," weighed about eight and a quarter pounds; the revised form, "Exhibit No. 62," weighed about five and a half pounds; the so-called Harriman plate, "Exhibit No. 64," weighs about six and four-tenths pounds; the Servis plates first used were very light, I don't remember the weight, but I think about two pounds. The Wolhaupter was heavier, I couldn't give the weight, though. The first Q. & W. as well as the Glendon plates were approximately the same weight. Afterwards we began buying lighter plates and thicker plates, as experience showed the early purchases were too light.

X Q. 204. Now, could you give us the thickness of the plates specified in the last question under the rail flange or bottom?

A. Under the outer edge of the rail base, the first Sacramento plate measured seven-sixteenths of an inch. Under the inner edge three-eighths of an inch. The next form of Sacramento plate, "Exhibit No. 62," three-eighths of an inch thick, under the outer edge of the rail base nineteen sixty-fourths of an inch under the inner edge of a rail having a base flange five inches wide. The Harriman plate, "Exhibit No. 64," has a uniform thickness under each edge of the rail base seven-sixteenths of an inch. The first Servis plates I don't think were over an eighth of an inch thick. The Wolhaupter was probably about three-sixteenths of an inch. The Q. & W. and Glendon possibly the same. I think toward the last we had some quarter of an inch thick of the Q. & W.

X Q. 205. And did the Sacramento plate remain of practically the same thickness during all the years you used it or was it increased at any time in thickness?

A. There was no change in dimensions between 1893 when
852 we first began making the plate shown in "Exhibit 62" until we began making the Harriman plate, "Exhibit 64."

X Q. 206. During the period from 1899 and 1904, could you tell us how many of either the Q. & W. or Glendon plates were purchased?

A. I could not give the number, there were several millions of each.

X Q. 207. And those plates, the Q. & W. and Glendon were standard during the period last indicated?

A. They were standards as was also the Sacramento plate.

X Q. 208. Do you know of any interchange of ideas or conferences between the officials or engineers of the Santa Fe System and the Southern Pacific System in reference to tie-plates in 1903 and 4?

A. There was no conference of that kind that I ever knew of.

X Q. 209. Was there any discussion or controversy in the "Railway Age" or the Journals in reference to this grooved or Harriman plate, that you know of?

A. I don't recall it.

X Q. 210. In the tie-plate prepared by you and shown in the "Railway Age" article illustrations the grooves on top were curved on one side instead of vertical. In the present Harriman plate these grooves have vertical sides, that is practically the only difference in configuration, is it not?

A. It is.

X Q. 211. This difference does not result in any material modification of the effect or function of the grooves, does it?

A. No.

X Q. 212. Referring to "Defendants' Exhibit A," con-
853 cerning which you were questioned as to the significance of the dotted lines in the left-hand figures, it is your interpretation that the hollow or depression in the top surface does not extend the entire width of the plate, is it not?

A. Yes.

X Q. 213. What do you understand to be the purpose of this hollow or depression as it appears?

A. To reduce the weight of the casting.

X Q. 214. It could also collect the sand and grit, could it not?

A. It could until it got full.

X Q. 215. And it would be a very simple matter once the depression or hollow suggested to extend it the entire width of the plate, would it not?

A. It could be of any length or width desired provided of course it left sufficient metal in the casting to give the required strength.

X Q. 216. Indeed, at the first glance at the upper figure without reference to the lower figure, the idea of a groove or depression in the entire length of the plate is suggested by the dotted lines, is it not?

A. No, the fact that there is a dotted line and not a full line indicates that it does not extend to the edge of the plate.

X Q. 217. But the length of the depression, so far as indicated

in the upper left-hand figure without reference to the lower figure is not in any way indicated, and reference must be had to the lower figure to show the dimensions lengthwise in the mind of the draftsman?

A. It indicates that there is a recess or depression in the plate which does not reach to the outer edge, the dimensions or form of which cannot be determined without referring to the plan.

X Q. 218. Referring to "Defendant's Exhibit LLL," your
854 idea is that the dotted lines along the bottom of Figure 661 indicate hollows or depressions in the bottom that did not extend the entire length or width of the plate?

A. Yes.

X Q. 219. Thus leaving upon the bottom of the plate marginal extensions or broad flanges, which come in contact with the tie?

A. I always say broad surfaces rather than broad flanges.

X Q. 220. But the configuration indicated immediately beneath the rail base and upon the upper surface of the plate shows a hollow or groove extending clear across, does it not?

A. It does.

X Q. 221. And the same is true in reference to the top groove or hollow in Figure 662 of the same drawing, indicating the extension of this clear across the plate?

A. Yes.

X Q. 222. Your present residence is San Francisco, Mr. Wallace?

A. It is.

X Q. 223. And what is your business since you left the employ of the Southern Pacific?

A. Consulting Engineer.

X Q. 224. Generally or in connection with some company?

A. In general practice.

X Q. 225. And I presume you came from San Francisco to Chicago for the purpose of testifying in this case at the request of the complainant?

A. Yes.

X Q. 226. And did you leave the service of the Southern Pacific voluntarily or was your resignation asked?

Col. Brown: Objected to as immaterial and also as not proper cross-examination.

855 A. I left voluntarily.

Cross-examination closed.

Redirect examination by Col. Brown:

R. D. Q. 227. Has your experience with patentees of railway devices led you to form any opinion as to the experience of such patentees as practical railroad men?

A. A very large number of those who have brought patented devices to my attention have been men in other lines of business. Many of them were surprisingly ignorant of railroad matters.

R. D. Q. 228. Please look at the illustration of a Servis flat top tie-plate, shown on page 12 and page 13 of "Complainant's Exhibit No. 23," and shown on "Complainant's Exhibit No. 26" and state how these illustrations agree or differ from the Servis tie-plates that you have been referring to in your examination as having been used on the Southern Pacific System?

A. They are about the same as we used except that a large number we used were smaller than indicated by the dimensions given in "Exhibit 23." The first we used I think had but two flanges. Later on other flanges were added, making three and four flanges.

R. D. Q. 229. Please look now at the illustrations on page 11 of "Complainant's Exhibit 23," and also the illustration on "Complainant's Exhibit No. 25," showing Q & W tie-plates, and state how these illustrations agree or differ from the Q & W tie-plates used on the Southern Pacific System, to which you have referred?

A. These drawings correspond to the forms we used.

R. D. Q. 230. I call your attention to X Q. 120 in which you were asked "while you were connected with the System" (referring to the Southern Pacific System) "was there ever a Wolhaupter tie-plate used which had a shoulder on it?" and to which you
856 replied, "No, to the best of my recollection?" What about the shoulder on the Harriman plate shown in "Complainant's Exhibit No. 64," and in view of which Exhibit do you desire to add to or modify in any way your answer to X Q. 120?

A. The Harriman plate was not known as a Wolhaupter plate. In my answer to the question referred to I had in mind the commercial Wolhaupter plate, or plates known to the trade as Wolhaupter plates

Examination closed.

Recess.

J. H. WALLACE.

And thereupon, M. J. COMERFORD, a witness produced on behalf of the complainant, having been first duly cautioned and sworn, testifies upon oath, in answer to interrogatories propounded by complainant's counsel, Col. Brown, as follows, to-wit:

Q. 1. Please state your name, and your residence.

A. Michael J. Comerford, 159 South Francisco avenue, Chicago.

Q. 2. What is your occupation?

A. I am inspector of tie-plates for the Railroad Supply Company.

Q. 3. How long have you been employed by the Railroad Supply Company?

A. Nine years the fifteenth of this month.

Q. 4. Previous to your employment by the Railroad Supply Company what experience have you had with inspection of track and with devices used in track by railroads?

A. I have been an inspector of iron and track for about six years, been a Road Master on the Kings County Elevated of Brooklyn for

about seven years and a half; have been Road Master of the
857 Lake Street Elevated in Chicago for five years, and one year as traveling salesman for the Rail Joint Spring Nut Company, Stock Exchange Building, Chicago.

Q. 5. State whether or not within the last month or six weeks you have made any inspection of the track of the Chicago & Northwestern Railway at Batavia, Illinois; Huntley, Illinois and Janesville, Wisconsin.

A. I have made such an inspection at Aurora, Batavia, Huntley, and Janesville, Wis.

t Q. 6. State whether or not at that time and at those places you caused to be taken or supervised the taking of photographs of certain parts of the track.

A. Yes, I have supervised the taking of photographs at Aurora, Batavia, and Huntley and Janesville, Wisconsin.

Q. 7. Please look at the two photographs that I now show you, marked No. 1 and No. 2, and state what these photographs are; describe where they were taken and what they represent. Describe each one separately.

A. This photograph No. 1 was taken at Aurora, Illinois, on the Chicago & Northwestern Road. The notation here says it was taken opposite No. 6 coal bin on the switch rail as shown there, and No. 2 was on the same Road and was taken farther north at 160 feet south of warehouse A.

Q. 8. What are these typewritten notations that are pasted on the backs of these two photographs and how did they come there, if you know?

A. I instructed the typewriter in our office to write those for me, notes that I had taken of these photographs and I have pasted these on the backs of the photographs myself.

Q. 9. These were notes taken by you, I suppose, at the time of your inspection and at the time the photographs were made?
858 A. They were taken at the time the photographs were made.

Q. 10. And the date, April 19, 1910, printed on the face of these photographs, what does that represent?

A. That's the date the photographs were taken.

Q. 11. And what tie-plates are shown on these two photographs?

A. The Wolhaupter plates.

Col. Brown: These two photographs are offered in evidence and will be marked, respectively, "Complainant's Exhibit No. 70, and Complainant's Exhibit No. 71, Comerford Inspection Photographs, C. & N. W. Track near Aurora, Illinois." G. R. Wilkins, Notary Public, 5/11/'10.

Mr. Reed: Objected to as not proper rebuttal.

Q. 12. Please look at the photographs which I now hand to you, Nos. 72, 73 and 74, and state when these photographs were taken, where they were taken and what tie-plates are shown?

Mr. Reed: Objected to as immaterial, not proper rebuttal and no

knowledge as to the kind of tie-plate shown on the part of witness, and that this objection shall apply to all succeeding questions of the same character.

A. These photographs were taken at Batavia, Illinois, April 19, 1910. They are Wolhaupter plates.

Q. 13. And what Railroad do these three photographs represent and where is the particular bit of track as shown in these three photographs?

A. The Chicago & Northwestern, No. 72, was taken fifteen feet north of the offices of the U. S. Windmill; No. 73, seventy-five feet north of No. 72, same track; and No. 74 was taken sixty feet south of the street crossing east rail.

(Here follow diagrams marked pages 859 to 862.)

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--XX--

THE RAILROAD SUPPLY COMPANY, Complainant, vs. THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendant. | In Chancery. | No. 29,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

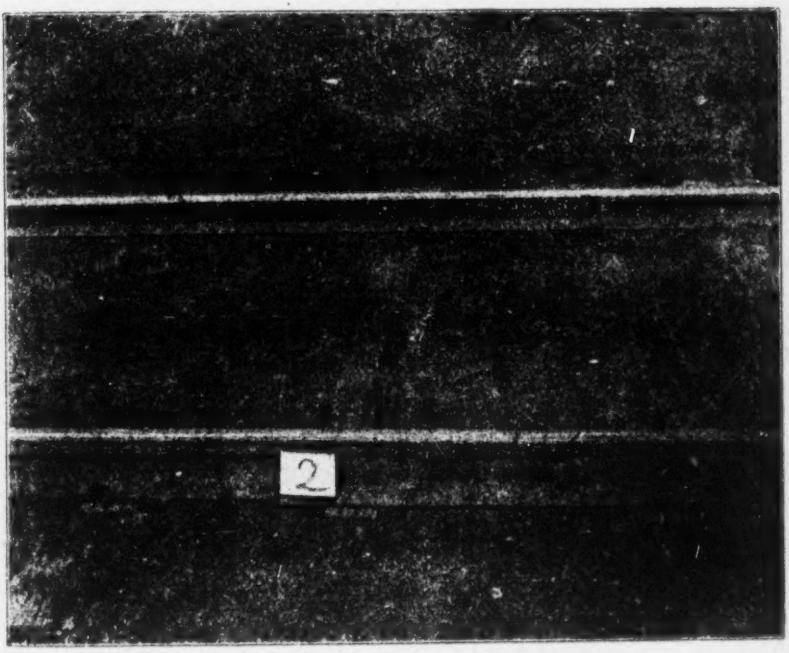
--XX--

THE RAILROAD SUPPLY COMPANY, Complainant, vs. THE ELYRIA IRON AND STEEL COMPANY, Defendant. | In Chancery. | No. 7,668.

"Complainant's Exhibit No.71, Comerford Inspection Photographs, C. & N. W. Track near Aurora, Illinois."

5/11/10.

Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--EX--

THE RAILROAD SUPPLY COMPANY, Complainant. | In Chancery.

vs.

THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendant. | No. 29,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

--EX--

THE RAILROAD COMPANY, Complainant. | In Chancery.

vs.

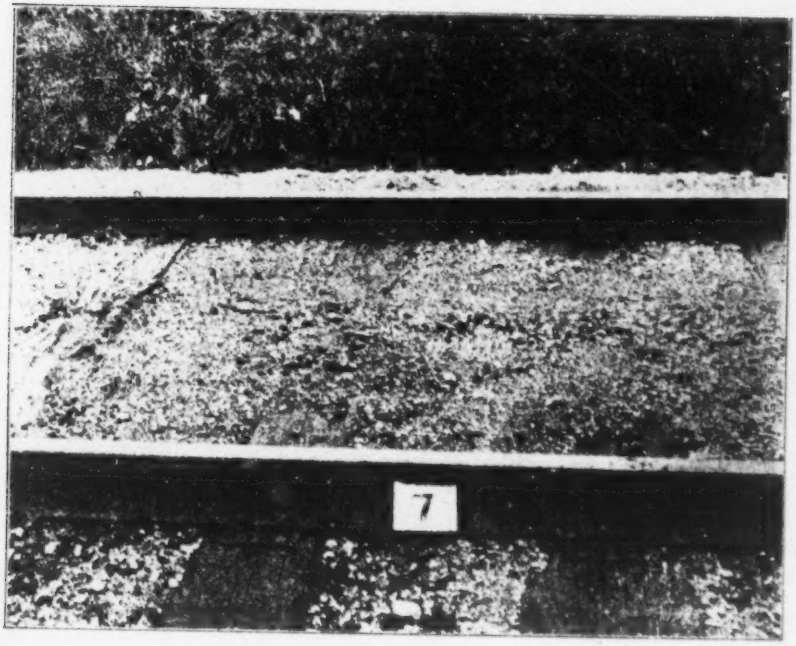
THE ELYRIA IRON AND STEEL COMPANY. | No. 7,648.

Defendant.

"Complainant's Exhibit No. 76, Comerford Inspection Photographs, C. & N. W. Tracks, Huntley, Illinois."

8/11/10.

Notary Public.



863 Col. Brown: These three photographs, identified by the witness, are offered in evidence and marked, respectively, "Complainant's Exhibits Nos. 72, 73 and 74, Comerford Inspection Photographs, C. & N. W. Track, Batavia, Illinois," G. R. Wilkins, Notary Public, 5/11/'10.

Mr. Reed: Same objection.

Q. 14. Please look at the photographs which I now show you marked 75, 76, 77, 78, 79 and 80 and state what they represent, what bit of track, where located, what tie-plates are shown, and when the photographs were taken.

A. No. 75 was taken on April 19, 1910. This was taken opposite Borden water tank, east rail, Chicago & Northwestern Railway at Huntley, Illinois, and shows the Wolhaupter tie-plate. No. 76 was taken April 19, 1910, fourteen feet east of switch point lead to Borden's Dairy, east rail, on Chicago & Northwestern Railway at Huntley; these are Wolhaupter plates. No. 77 was taken April 19, 1910, on the Chicago & Northwestern Railway at Huntley, Illinois, one hundred and twenty feet west of switch point mentioned at No. 76 east rail; these are Wolhaupter tie-plates. No. 78 was taken April 19, 1910, on the Chicago & Northwestern Railway, Huntley, Illinois, sixty feet west of No. 77, east rail; these are Wolhaupter plates. No. 79 was taken April 19, 1910, on the Chicago & Northwestern Railway, Huntley, Illinois, ten feet west of No. 78; these are Wolhaupter plates. No. 80 was taken April 19, 1910, on the Chicago & Northwestern Railway, Huntley, Ill., ninety feet west of No. 79, east rail; these are Wolhaupter plates.

Col. Brown: These photographs Nos. 75 to 80, inclusive, just identified by the witness, are offered in evidence and marked "Complainant's Exhibits Nos. 75, 76, 77, 78, 79 and 80 Comer-
864 ford Inspection Photographs, C. & N. W. Tracks, Huntley, Illinois," G. R. Wilkins, Notary Public, 5/11/10.

Mr. Cooke: Objection repeated.

Q. 15. Do all these photographs correctly represent the condition of the track, the ties and the tie-plates at the points where the photographs were taken, and which are represented on the photographs, as you saw the same the day the photographs were taken?

A. Yes, sir.

Q. 16. Now, please look at the fourteen photographs that I now hand to you, state the date when each was taken, the road and the point of the road or track where the photograph was taken and what tie-plate or tie-plates are shown in the photographs.

A. These photographs were all taken on the same day, May 6, 1910, and they were all taken on the Chicago & Northwestern Railroad near Janesville, Wisconsin.

The first photograph is nearly opposite the track house, known as the south yards, and the Wolhaupter plate is shown: No. 2 is the third rail east of No. 1 on the westbound track, west rail, Wolhaupter tie-plate, No. 3, westbound track, west rail, fourth rail east of No. 1, Wolhaupter shoulder tie-plate; No. 4 is the sixth rail of No. 1, west-

bound track, west rail, Wolhaupter shoulder tie-plate; No. 5, fifth rail from No. 1, west-bound track, west rail, Wolhaupter shoulder tie-plate; No. 6, the sixth rail from No. 1, east rail, west-bound track, is the Wolhaupter shoulder tie-plate; No. 7 are ties only without tie-plates directly opposite No. 6 on the east-bound track. These ties have no tie-plates on them. No. 8 is located at the end of No. 6 at the termination of the tie-plate and has no tie-plates; No. 9 is one hundred and twenty feet east of No. 6, west-bound track, no tie-plates; No. 10 three hundred feet east of No. 6, west-bound track west rail; these are Seller tie-plates. No. 11 is three rails east of

(Here follows diagram marked pages 865 and 866.)

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--ex--

THE RAILROAD SUPPLY COMPANY, Complainant, vs. THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendant. : In Chancery. : No. 29,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

--xx--

THE RAILROAD SUPPLY COMPANY, Complainant, vs. THE ELYRIA IRON AND STEEL COMPANY, Defendant. : In Chancery. : No. 7,669.

"Complainant's Exhibit, No. 86. Comerford Inspection Photographs, C. A.&N.W. Tracks. Janesville, Wisconsin."

E. Wilkins
Notary Public.

8/11/10.

867 No. 10, west-bound track, west rail; these are Seller tie-plates. No. 12, four rails east of No. 10, west-bound track, west rail; these are Seller tie-plates. No. 13 is nine rails east from No. 10, west-bound track rail; these are Seller tie-plates; and No. 14 is twelve rails east of No. 10, west-bound track, west rail; these are Seller tie-plates.

Col. Brown: The fourteen photographs identified by the witness are offered in evidence and marked "Complainant's Exhibits Nos. 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93 and 94 respectively, Comerford Inspection Photographs, C. & N. W. Tracks, Janesville, Wisconsin" G. R. Wilkins, Notary Public, 5/11/10.

Mr. Cooke: Same objection repeated.

Q. 17. State whether or not these photographs that you have last identified correctly represent the condition of the track including the rail, the ties and the tie-plates at the time of your inspection when these photographs were taken on May 6, 1910.

A. They do, they correctly represent it.

Q. 18. How do you know that those plates which you have designated as Wolhaupter, or Wolhaupter shoulder or Sellers plates were the plates commonly sold under those names. In other words, how do you identify those plates?

A. I am familiar with the makes of the plates. I saw them put in up there in the winter of 1907. I saw them when they were being installed on the ties before the track was put in use.

Q. 19. You are referring, I suppose, to the last set of fourteen photographs showing the C. & N. W. tracks near Janesville, are you?

A. Yes, sir.

868 Q. 20. You did not see, did you, the tie-plates installed near Huntley, or Batavia or Aurora?

A. No, sir.

Q. 21. Are you familiar with the Sellers plate, known as such on the market?

A. Yes, sir.

Direct examination closed.

Cross-examination by Mr. Reed:

X Q. 22. Who took the photographs at Aurora and Batavia?

A. Mr. Shaw for the Copelin Photograph Company.

X Q. 23. Who selected the view points at Batavia and Aurora?

A. I selected the view points at both these places.

X Q. 24. Who else accompanied you on these occasions?

A. Just the photographer and myself.

X Q. 25. At whose request did you take the photographs?

A. My superior, Mr. Bell.

X Q. 26. This line of the Chicago & Northwestern Railroad at Batavia and Aurora is a small, unimportant branch line, is it not, with a single track and very few trains?

A. It is a single track with considerable passenger traffic and considerable freight, also.

X Q. 27. It runs from Geneva down to Aurora, which is only ten or twelve miles in length, is it not, terminating at Aurora?

A. While the track terminates at Aurora, the trains are run from Chicago direct to Aurora.

X Q. 28. Were Wolhaupter tie-plates installed at other points on the track at Batavia and Aurora than the ones selected?

869 A. There was not a great quantity of plates at either place to select from. The tie-plates seemed to be scattered at long intervals at both of these places.

X Q. 29. But there were some places that you did not photograph that had Wolhaupter tie-plates installed?

A. My object was to select a few places at each point so as not to take the photographer on a long journey with a heavy load and I selected the nearest place to the depots.

X Q. 30. Did you take views of all of the Wolhaupter plates installed near the depots in each place, or did you omit some?

A. No, we did not take all of the plates that were installed at the depots. We took those that were free from dirt and gravel. The tracks at these points are not very clean. At many places the tie-plates being completely covered up with cinders or other refuse.

X Q. 31. Did you see any Wolhaupter plates at these two places that were buckled or broken, or out of repair?

A. No, sir, I did not.

X Q. 32. Did you make any examination to see whether the tie-plates that you did not photograph were buckled or broken?

A. I always make it a point to look at tie-plates and their condition wherever I go. It doesn't matter whose make they are, and I saw at least the majority of the plates on my way while taking those photographs.

X Q. 33. And did you examine all of the plates that you saw installed at these places to see whether they were buckled, broken or out of repair?

A. I desire to correct my last answer in regard to seeing all of the plates over every point that I have taken photographs on. I saw all of the tie-plates, instead of a majority of them as I stated previously.

870 I have not seen a buckled plate or any plate out of repair at those points.

X Q. 34. I asked you whether you examined all of the plates at these places to see whether they were buckled, broken or out of repair?

A. It is my purpose at all times to look tie-plates over wherever I go and in this case I done the same thing and found none buckled, or broken, or out of repair.

X Q. 35. What examination did you make of those that were covered with sand or dirt?

A. The plates that were covered with sand or dirt would not show plainly in the photograph, but the dirt can not hide a buckled plate, so that I didn't find any.

X Q. 36. The dirt could hide a broken plate, could it not?

A. Hardly possible. The plate would turn up almost on end if

broken, and my experience of inspections for years has trained my eye to pick out such defects.

X Q. 37. How many places at these two towns did you see Wolhaupter plates installed that you did not photograph?

A. At Aurora there were not very many plates, perhaps one hundred and fifty; at Batavia there couldn't be over four hundred plates all told. The tracks were not fully tie-plated.

X Q. 38. About how many did you photograph in each place?

A. Oh, from two to three tie-plates in each photograph and sometimes only one.

X Q. 39. How far from the station in each place did your examination extend?

A. Not more than possibly five hundred feet.

X Q. 40. You mean in both directions in each instance, or in only one direction?

871 A. In one direction either north or south, as the case may be.

X Q. 41. What kind of wood were the ties of?

A. Cedar with a little hemlock occasionally mixed in.

X Q. 42. What was the state of affairs at Huntley? Were the tracks there wholly tie-plated or only in places?

A. Only in places.

X Q. 43. And did you photograph all of the places that you saw at Huntley that were tie-plated or only part of them?

A. Only part of them.

X Q. 44. It's a single track road at Huntley where you took the pictures?

A. Yes, sir.

X Q. 45. And Huntley is on the Rockford branch of the Northwestern, is it not?

A. Yes, sir, that's my belief.

X Q. 46. Janesville is on the main line of the Northwestern to Minneapolis and St. Paul, and the road is double tracked where you photographed, is it not?

A. Yes, sir.

X Q. 47. Are both tracks fully tie-plated at Janesville?

A. No, sir, only a portion of one track.

X Q. 48. Are the Sellers tie-plate and Wolhaupter tie-plate photographed at Janesville in the same track?

A. The same track.

X Q. 49. Are the photographs of the Sellers tie-plate at Janesville on straight track or curved?

A. Straight track.

X Q. 50. And the Wolhaupter plates that were photographed, were they on straight track or curved at Janesville?

A. On straight track.

X Q. 51. And were there other places where Sellers plates were installed that you did not photograph?

872 A. Oh, yes, I didn't take but a small quantity of them.

X Q. 52. And the same is true of the Wolhaupter plate at Janesville?

A. I took one photograph on each rail where the Wolhaupter plates were installed.

X Q. 53. And that left a number of places where Wolhaupter plates were installed that were not photographed?

A. Yes, there were quite a number of tie-plates that were not photographed.

X Q. 54. Were these photographs at Janesville taken on the old track or the new track?

A. The new track, sir.

X Q. 55. At what time in 1907 were the Wolhaupter plates installed at Janesville?

A. I believe it was in November, 1907, that the Wolhaupter plates were placed on that track.

X Q. 56. Did you see the Sellers plates installed at Janesville?

A. Yes, sir. Part of the installation. Did not see all of them.

X Q. 57. And were the Sellers plates installed at Janesville at the same time, practically, as the Wolhauptor?

A. Both were put in at the same time.

Examination closed.

MICHAEL J. COMERFORD.

And thereupon adjournment was taken until Tuesday, May 17, 1910, at 10:30 a. m., at same place.

G. R. WILKINS,
Notary Public.

873 CHICAGO, ILLINOIS, May 17, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

And thereupon, T. THOMPSON, a witness produced on behalf of the complainant, having been first duly sworn and cautioned, testifies in answers to interrogatories propounded by complainant's counsel, Col. Brown, as follows, to-wit:

Q. 1. Please state your name, age, residence and present occupation?

A. T. Thompson; 47 years; 112 Arch court, Joliet, Illinois; Road Master A., T. & S. F. Railroad, commonly known as the Santa Fe System.

Q. 2. State whether or not you appeared here this morning because you were subpœnaed by the United States Marshal?

A. I do.

Q. 3. And did the Marshal give you your witness fee and mileage?

A. Yes, sir, $5.20 all told.

Q. 4. How long have you been employed by the Santa Fe Railroad?

A. Since 1887; 11th day of August, 1887.

Q. 5. How long have you been in your present position as Road Master?

A. Since 1897, excepting one year that the office was cut out and I was running a construction gang.

Q. 6. And what year was that, if you remember?

A. 1899.

Q. 7. What territory is now under your jurisdiction as Road Master?

A. From Chicago to Mile Post 67, including Chicago Terminal.

874 Q. 8. When you were first appointed Road Master did your jurisdiction embrace the same territory that you now have, or some other territory?

A. No, sir, it included the same territory that I now have excepting my territory extended to Pekin, Illinois, including Ancona.

Q. 9. And did your territory then, and does it now, include Corwith, Illinois, and McCook, Illinois?

A. Yes, sir.

Q. 10. Mr. Thompson, please tell the Court, in a general way, what are the duties of a Road Master.

A. To handle all work pertaining to track, such as renewing of ties, rails and ballast, looking after safety of bridges and track and road bed. That includes the duties in a general way. And superintend all work thereof.

Q. 11. I suppose this includes the superintendence of the construction and repair gangs employed?

A. It does.

Q. 12. And does it also include personal inspection of the track from time to time by the Road Master himself?

A. Yes, sir.

Q. 13. So that a Road Master should be reasonably familiar with the condition of his road bed, track and appliances used thereon within his jurisdiction, should he?

A. Yes, sir.

Q. 14. And are you so familiar with conditions on the Santa Fe Road in your jurisdiction?

A. Yes, sir.

Q. 15. Please state whether or not the Santa Fe Road in your territory uses tie-plates of any kind.

A. Yes, sir.

Q. 16. What was the earliest form of tie-plate on your territory that you recall?

875 A. The Wolhaupter flange-plate, as we call it.

Q. 17. Please look at the model marked "Complainant's Exhibit No. 67," and state if you recognize that and what it represents?

A. This is the first model of the Wolhaupter tie-plate that was furnished our Road as I can remember it.

Mr. Reed: Question and answer objected to as not rebuttal, irrelevant and immaterial.

Q. 18. Were many of such Wolhaupter tie-plates used in track in your territory?

Mr. Reed: Objection repeated.

Defendants' counsel objects to this line of testimony as irrelevant, immaterial and not proper rebuttal. It is stipulated at the close of the testimony objections may be made with the same force and effect as though entered specifically after each question and answer.

A. A great many of them, as near as I can remember.

Q. 19. And state whether or not any of said Wolhaupter tie-plates are still in track in your territory?

A. Yes, there is a good many of them on ties that have not yet been renewed, or where a rail has not been changed.

Q. 20. Has the rail been changed in your territory, and if so, more than once during your employment?

A. Several times at different points.

Q. 21. And state whether or not a heavier rail has been used or is now used, than the weight of the rail under which the first Wolhaupter plates were installed.

A. At several places heavier rails are now used.

Q. 22. Please look at the twelve photographs which I now show to you that are marked on the backs with numbers 1 to 12, inclusive, and state whether or not you recognize these photographs as illustrating parts of the road bed and track of the Santa Fe System within your jurisdiction.

876 A. I recognize them all except these two, Nos. 1 and 12, which I am not positive about.

Q. 23. Now, please look at the photograph No. 2 and state, please, what portion of the track it represents, as nearly as you can.

A. This picture represents the A., T. & S. F. main tracks opposite the Chicago Crushed Stone Co. Quarry at McCook, Ill.

Mr. Reed: The same objection and same reservation with reference to the photographs and testimony relative thereto are made.

Q. 24. Please state what tie-plates are shown in this photograph No. 2, upon the ties and beneath the rails.

A. On the west-bound main, rib Wolhaupter plates are used as shown.

Q. 25. Please look now at photograph No. 3 and state first what part of the road bed is illustrated and what tie-plates are shown.

A. This photograph shows practically the same location as the other one, except it is a slight distance farther west. Rib Wolhaupter tie-plates are used on west-bound main, except one tie shown on photograph is equipped with the flat bottom Wolhaupter tie-plate.

Q. 26. Please answer the same question with respect to photograph No. 4.

A. This photograph still shows the track a little bit farther west than the previous one. West-bound track equipped with the rib Wolhaupter tie-plates excepting two ties equipped with the flat bottom Wolhaupter tie-plates.

Q. 27. Please answer a similar question to photograph No. 5.

A. This one shows a track still farther west. West-bound track equipped with the rib Wolhaupter tie-plates except one tie has one flat bottom Wolhaupter tie-plate.

877 Q. 28. Please answer the same question with respect to photograph No. 6.

A. This one shows a track 60 feet farther west than the previous one. West-bound main equipped with rib Wolhaupter tie-plates, except two ties which are equipped with flat bottom Wolhaupter tie-plates.

Q. 29. I ask you the same question with respect to photograph No. 7.

A. This one shows the track still 60 feet farther west, opposite the west extreme end of Chicago Crushed Stone Company's Quarry. West-bound main equipped with ribbed Wolhaupter tie-plates, except first tie from joint on left rail has one flat bottom Wolhaupter tie-plate.

Q. 30. I ask you the same question as to photograph No. 8.

A. This one shows the east-bound track about three hundred feet from the Chicago & Joliet Electric Railway Crossing, and the track is equipped with the flat bottom Wolhaupter tie-plates, track on rock ballast.

Q. 31. Please answer the same question with respect to photograph No. 9.

A. This photograph shows tracks about opposite to the Chicago Crushed Stone Company's office near the Chicago & Joliet Electric Railway Crossing. West-bound track equipped with rib Wolhaupter tie-plates, except two ties which have the flat bottom Wolhaupter tie-plates on left rail.

Q. 32. I ask you the same question with reference to photograph No. 10.

A. This one shows the tracks a slight distance west of the Chicago Crushed Stone Company's office. West-bound *train* equipped with rib Wolhaupter tie-plates.

Q. 33. Please answer a similar question with reference to photograph No. 11.

878 A. This one shows the tracks at the first rails connecting the Chicago & Joliet Electric Railway crossing at the Calumet road. Ties on west-bound track all equipped with Wolhaupter flat bottom tie-plates.

Col. Brown: The photographs numbered 2 to 11, both inclusive, just identified by the witness are offered in evidence as exhibits and marked, respectively, "Complainant's Exhibits Nos. 95, 96, 97, 98, 99, 100, 101, 102, 103 and 104, Photographs Track A., T. & S. F., near McCook, Illinois," G. R. Wilkins, Notary Public, 5/17/10.

Mr. Reed: Objected to as irrelevant, immaterial and not proper rebuttal.

Q. 34. About when were the first of the flat bottom Wolhaupter tie-plates, that are shown on these photographs that you have just identified, installed in track?

A. Most of the flat bottom tie-plates on the west-bound track were put on last and this year, as I renewed the ties. The east-bound track was constructed during the year 1905 and plates supplied at that time.

Q. 35. Why do you call the flat bottom plates that you have referred to in these photographs as "Wolhaupter flat bottom"?

A. I don't know. It's been the practice ever since we commenced using tie-plates to specify them by that name.

Q. 36. You mean specify them on your requisitions?

Mr. Reed: Objected to on the above ground, also as leading and also as calling for secondary evidence.

A. I think we do. In writing letters to the Superintendent or any one else referring to plates, I always specify them as flat bottom Wolhaupter plates.

Mr. Reed: Motion to strike out answer on same ground.

Q. 37. State whether or not you have noticed the word Wolhaupter rolled in on what you have called the Wolhaupter flat bottom tie-plates.

(Here follow diagrams marked pages 879 to 896.)

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN
DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS
--XX--

THE RAILROAD SUPPLY COMPANY
Complainant) In Chancery.
vs.
THE HART STEEL COMPANY and) No. 29,294.
GUILFORD S. WOOD
Defendant.)

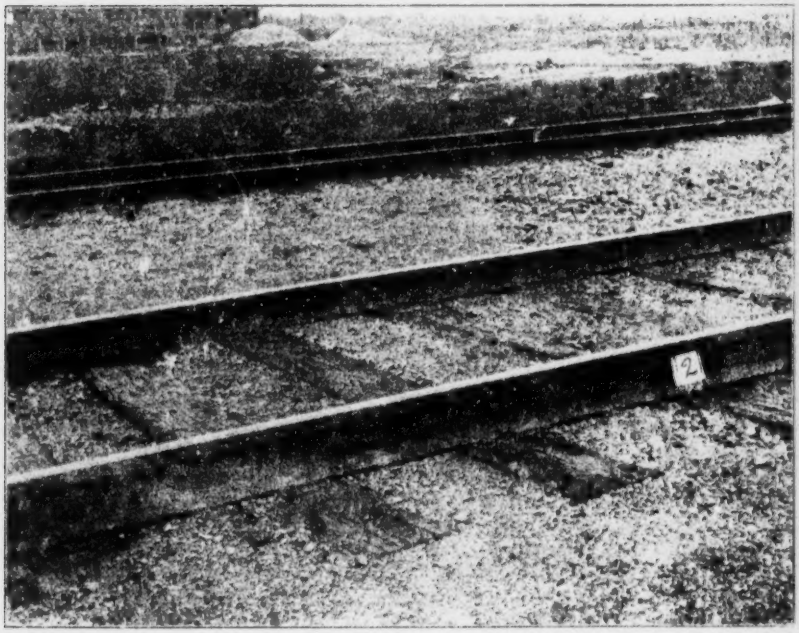
IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN
DIVISION OF THE NORTHERN DISTRICT OF OHIO.
--XX--

THE RAILROAD SUPPLY COMPANY
Complainant : In Chancery.
vs. :
THE KLYRIA IRON & STEEL CO.) No. 7,668
Defendant. :

"Complainant's Exhibit No. 95. Photograph Track
A. T. & S. F. near McCook, Illinois."

6/17/1910.

J. Wilkins
Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--XX--

THE RAILROAD SUPPLY COMPANY : Complainant } In Chancery.
vs. :
THE HART STEEL COMPANY and GUILFORD S. WOOD : Defendant } No. 29,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO,

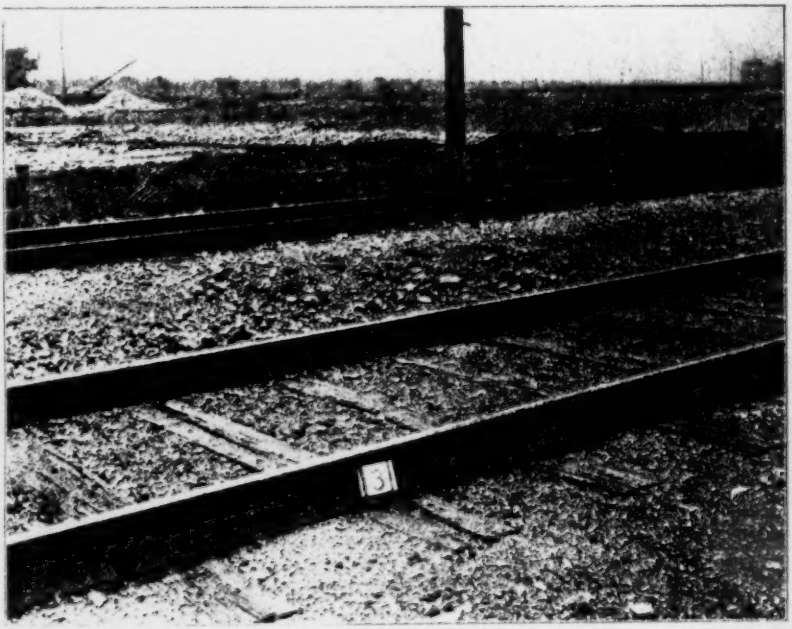
--XX--

THE RAILROAD SUPPLY COMPANY : Complainant } In Chancery
vs. :
THE ELYRIA IRON & STEEL CO. : Defendant } No. 7,640.

"Complainant's Exhibit No. 96, Photograph Track A. T. & S. F., near McCook, Illinois."

8/17/1910

E. B. Wilkins
Notary Public



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--xx--

THE RAILROAD SUPPLY COMPANY, Complainant; vs. THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendant — In Chancery, No. 29,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

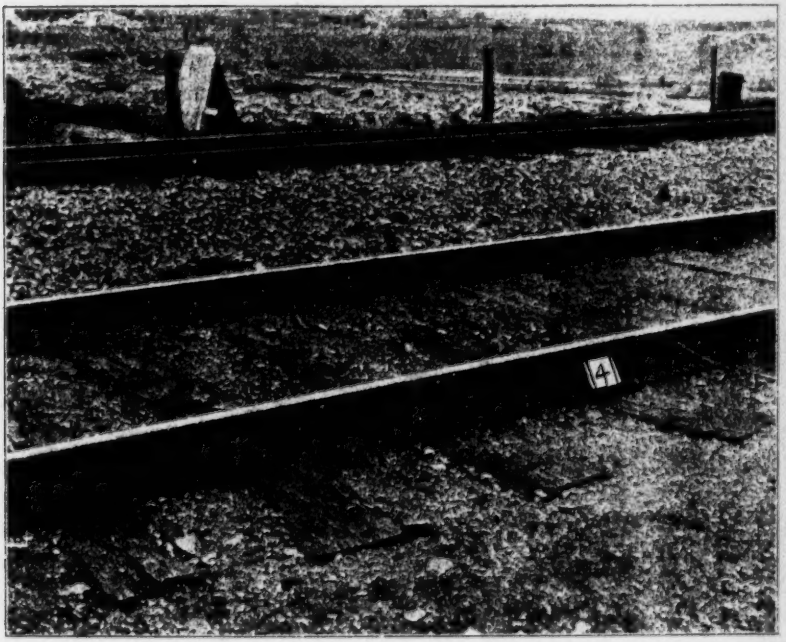
--xx--

THE RAILROAD SUPPLY COMPANY, Complainant, vs. THE ELYRIA IRON & STEEL CO., Defendant. — In Chancery, No. 7,668.

"Complainant's Exhibit No. 97, Photograph Track A. T. & S. F., near McCook, Illinois."

8/17/1910.

J. R. Wilkins
Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--XX--

THE RAILROAD SUPPLY COMPANY : Complainant } In Chancery,
vs. :
THE HART STEEL COMPANY and GUILFORD S. WOOD : Defendant } No. 29,294

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

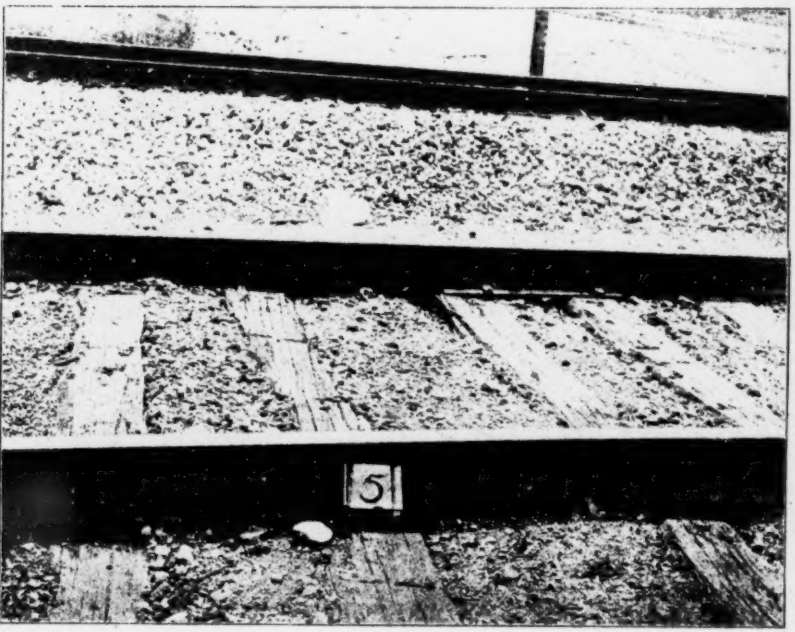
--XX--

THE RAILROAD SUPPLY COMPANY } Complainant : In Chancery,
vs. }
THE ELYRIA IRON & STEEL CO. } Defendant. : No. 7,668.

"Complainant's Exhibit No. 98, Photograph Track A. T. & S. F., near McCook, Illinois."

8/17/1910.

Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--EX--

THE RAILROAD SUPPLY COMPANY : Complainant : In Chancery.
vs. :
THE HART STEEL COMPANY AND GUILFORD S. WOOD : Defendant : No. 29,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

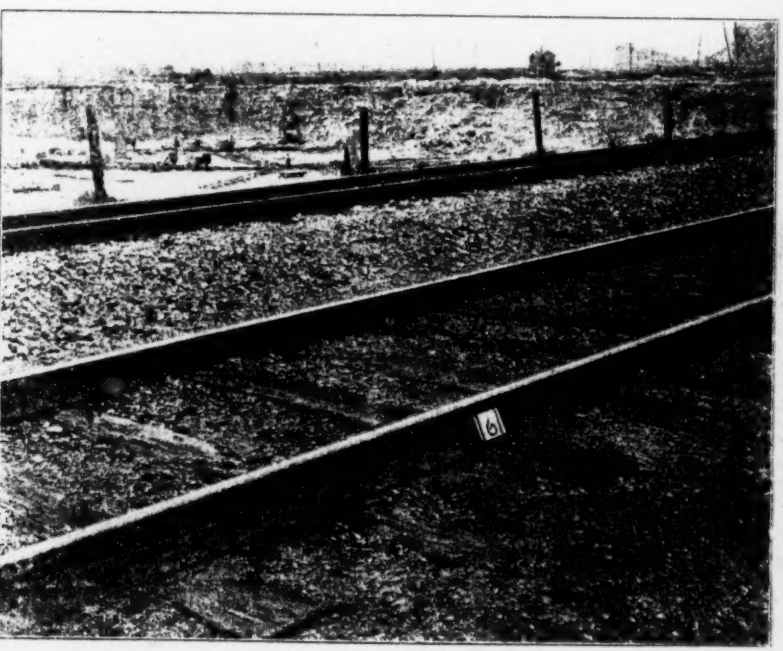
--EX--

THE RAILROAD SUPPLY COMPANY : Complainant : In Chancery.
vs.
THE ELYRIA IRON & STEEL CO. : Defendant. : No. 7,868.

"Complainant's Exhibit No. 99, Photograph Track A. T. & S. F., near McCook, Illinois."

5/17/1910.

Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--XX--

THE RAILROAD SUPPLY COMPANY : Complainant — In Chancery,
vs. — No. 29,294.
THE HART STEEL COMPANY and GUILFORD S. WOOD : Defendant

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

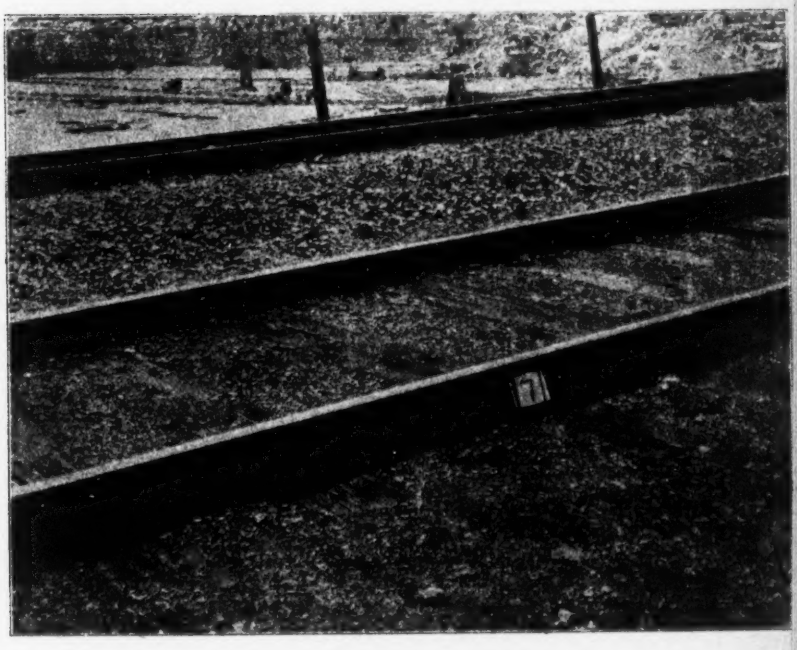
--XX--

THE RAILROAD SUPPLY COMPANY : Complainant — In Chancery,
vs. — No. 7,660.
THE ELYRIA IRON & STEEL CO. : Defendant

"Complainant's Exhibit No. 100, Photograph Track A. T. & S. F., near McCook, Illinois."

8/17/1910.

G. Wilkins
Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--XX--

THE RAILROAD SUPPLY COMPANY, Complainant } In Chancery.
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendant. } No. 29,294.

IN

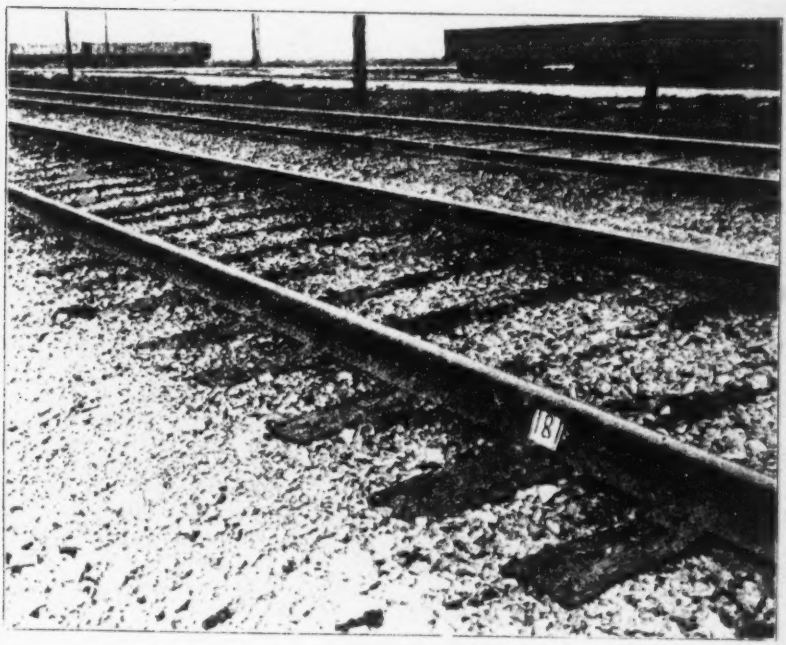
THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

--XX--

THE RAILROAD SUPPLY COMPANY, Complainant } In Chancery.
vs.
THE ELYRIA IRON & STEEL CO., Defendant } No. 7, 668.

"Complainant's Exhibit No. 101, Photograph Track A. T. & S. F., near McCook, Illinois."

8/19/1910. J. Wilkins
Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

---xx---

THE RAILROAD SUPPLY COMPANY	:	
Complainant	)	
vs.	:	In Chancery.
THE HART STEEL COMPANY and	)	
GUILDFORD S. WOOD	:	No. 29,294.
Defendant	)	

IN

THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

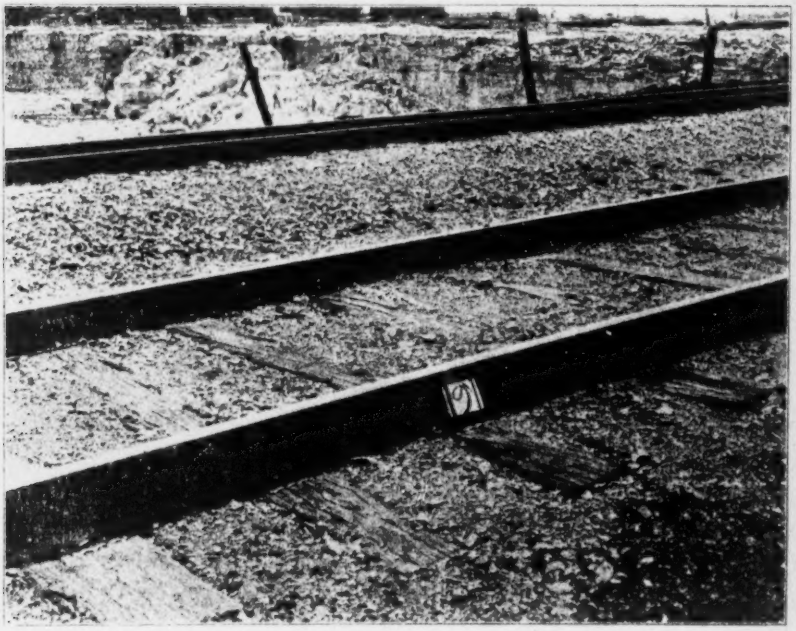
---xx---

THE RAILROAD SUPPLY COMPANY	)	
Complainant	:	In Chancery.
vs.	)	
THE ELYRIA IRON & STEEL CO.	:	No. 7,668.
Defendant	)	

"Complainant's Exhibit No. 108, Photograph Track A. T. & S. F., near McCook, Illinois."

5/17/1910.

E. B. Wilkins
Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--XX--

THE RAILROAD SUPPLY COMPANY
Complainant
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD
Defendant.

In Chancery.

No. 29,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

--XX--

THE RAILROAD SUPPLY COMPANY
Complainant
vs.
THE ELYRIA IRON & STEEL CO.
Defendant.

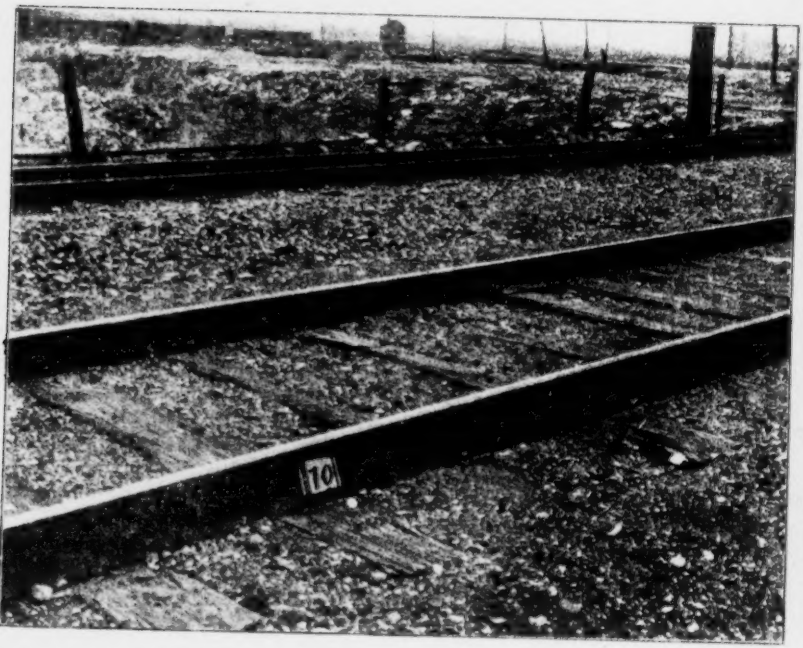
In Chancery.

No. 7,668.

"Complainant's Exhibit No. 103, Photograph Track A. T. & S. F., near McCook, Illinois."

5/17/1910.

J. R. Watkins
Notary Public.



897 Mr. Reed: Objected to on each of the grounds last named.

A. Not positively.

Q. 38. Please look at the book, Track, "Complainant's Exhibit No. 23," on pages 16 and 17, and state what tie-plates are there shown, if you recognize them.

A. These on pages 16 and 17, the drawing, I think, represent the plain flat bottom Wolhaupter tie-plates which were made our standard about 1904. Now, I am not positive about that, but I think it was about 1904.

Mr. Reed: Objections to question and answer renewed on same ground.

Q. 39. About how long was this flat bottom Wolhaupter tie-plate standard on the Santa Fe, if you know?

Mr. Reed: Same objections.

A. Until some time last year, I think.

Q. 40. What weight of rail was used on the Santa Fe in your division over the first Wolhaupter rib tie-plates when installed?

A. As near as I can remember they were furnished principally at first for 71, 66 and 52 pound rails.

Mr. Reed: Objection and motion renewed on same grounds.

Q. 41. And these lighter rails were replaced by heavier rails later on, as I understand it, is that right?

A. Yes, sir. At different points.

Mr. Reed: Same objections and motion.

Q. 42. State whether or not during the last ten years the rolling stock and equipment of the Santa Fe System has from time to time increased in weight and size.

Mr. Reed: Objected to as irrelevant, immaterial and not proper rebuttal.

A. It has.

898 Q. 43. And how about the traffic; has that also increased?

Mr. Reed: Same objections.

A. Do you mean the amount of trains or material?

Q. 44. Both.

A. Yes, sir.

Mr. Reed: Each question and answer is objected to on the grounds last mentioned.

Q. 45. I meant by my question, Mr. Thompson, to inquire whether or not during the last ten years there has been an increase in tonnage as well as an increase in traffic, that is, number of trains per day, and with that understanding, what is your answer?

Mr. Reed: Same objections.

A. With the increased tonnage, heavier power and equipment it has become necessary to provide heavier rails and plates; in other words, a more substantial road bed in every respect.

Mr. Reed: Motion to strike out above answer on above ground and also as not responsive.

Q. 46. Please look at the photograph that I now hand to you and state if you can recognize it, and if so, what it represents and what tie-plates are shown therein.

Mr. Reed: Same objections.

A. I can't positively identify this photograph, as there is no sign where to locate this point, excepting part of the spill bank of the Sanitary District Canal, but I think it represents our west-bound main track near Corwith Junction, at which point we have a side track on the right-hand side. Several ties in main track are equipped with rib Wolhaupter tie-plates. Two ties with the flat bottom Wolhaupter tie-plates.

Mr. Reed: Motion to strike out answer as irrelevant, immaterial and not proper rebuttal.

(Here follows diagram marked pages 899 and 900.)

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--XX--

THE RAILROAD SUPPLY COMPANY
Complainant
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD
Defendant.

In Chancery.

No. 29,294.

IN

THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

--XX--

THE RAILROAD SUPPLY COMPANY
Complainant
vs.
THE ELYRIA IRON & STEEL CO.
Defendant.

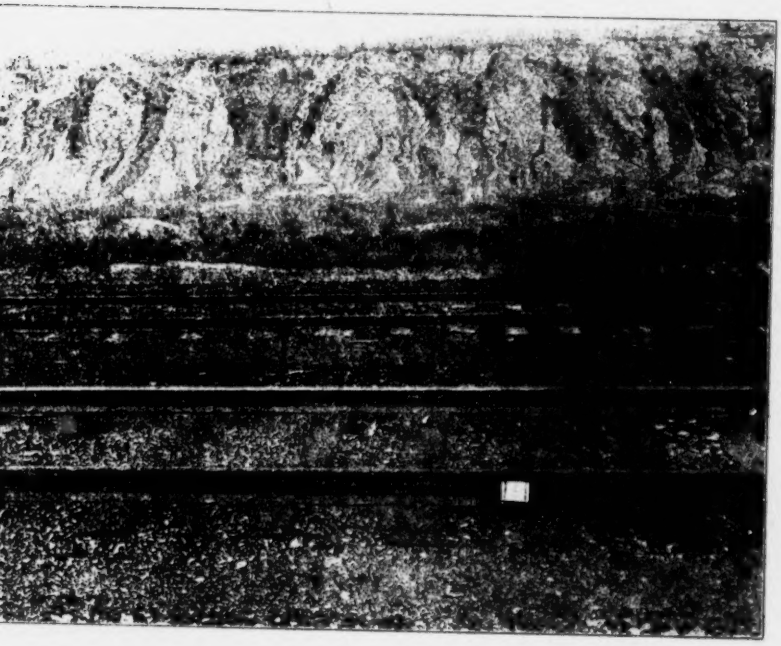
In Chancery.

No. 7,668.

"Complainant's Exhibit No. 105, Photograph A.T. & S.F. Track near Corwith, Illinois."

8/17/1910.

J. Wilkens
Notary Public.



901 Col. Brown: The photograph referred to by the witness is now offered in evidence and marked "Complainant's Exhibit No. 105, Photograph A., T. & S. F. Track near Corwith, Illinois," G. R. Wilkins, Notary Public, 5/17/10.

Q. 47. Please look again at the photographs numbered 2 to 11, inclusive, and introduced as "Exhibits Nos. 95 to 104," both inclusive, and state, as nearly as you can, the date when the Wolhaupter rib tie-plates, shown on these exhibits, were installed in the Santa Fe track. Give the dates as nearly as you can.

A. As near as I can remember the west-bound track referred to on those photographs, the ties were renewed in 1902 and plates were applied at that time. The ties having a dating nail in them on the top, part of tie on right-hand side giving the date they were put in.

Q. 48. And you were the Road Master at the time these ties were put in in 1902, were you?

A. Yes, sir. That is, I think the ties were put in that year. I am not positive. I might add, that the Foreman that put the ties in is still working for me.

Q. 49. And your best recollection now is that the year was 1902?

A. Yes, sir.

Q. 50. And as I understand your answer, the Wolhaupter rib tie-plates shown in these exhibit photographs were installed in track at the time you renewed the ties, as you stated?

Mr. Reed: Objected to as leading.

A. I think so.

Q. 51. Do you recall about what year it was when you received from the Storehouse or Supply Department of your Road the last lot of Wolhaupter rib tie-plates?

A. No, sir, I do not.

Q. 52. Or could you say whether you received the last lot
902 of Wolhaupter rib tie-plates before or after you received the first lot of flat bottom Wolhaupter plates?

A. I can not.

Q. 53. Do you know, or have you ever heard, of any instance or instances, where any kind of a tie-plate was placed on the tie and beneath a rail joint?

Mr. Reed: Objected to as immaterial and not rebuttal.

A. Yes, sir. There were some of the Wolhaupter plates made of that pattern, and used on the Western Lines of the Santa Fe. Just where and how many, I don't know, but I have seen a number of them come in in the scrap of late.

Direct examination closed.

Mr. Reed: As stipulated, each question and answer is now objected to as irrelevant, immaterial and not proper rebuttal and motion to strike out each answer on same grounds, reserving the objections specifically entered.

Cross-examination by Mr. Reed:

X Q. 54. When was it that you saw the tie-plates that had been used under the joint for the first time?

A. Now, I can't say that.

X Q. 55. Well, about how long ago was it?

A. Perhaps a year ago or so. I saw them several times come in with the scraps.

X Q. 56. And please describe the plates that you have in mind as having been used under joints.

A. I think they were about eight inches long, or about that, and punched so that both rails could be spiked at heels of switches or at each side of angle-bar, whatever they were used for.

X Q. 57. I mean that you should give a full description of the plates, stating a configuration of the upper and lower surfaces
903 and what direction the flanges on the bottom, if any, ran, whether or not there was a shoulder on the top and whether or not the top surface was flat, or corrugated or grooved.

A. Well, as stated before, the plates were long enough to accommodate the width of the joint to fit the size of joint made for it. Plates about four or four and a quarter inches wide corrugated on top and ribs on bottom, same as ordinary Wolhaupter plates. No shoulder, straight plate.

X Q. 58. They were like "Complainant's Exhibit No. 67," so far as configuration is concerned?

A. Yes.

X Q. 59. The only difference between the Wolhaupter rib plates that were used at the joint and "Exhibit No. 67," was in the dimensions?

A. Yes, that's all, in the dimensions and punchings.

X Q. 60. And these plates that you speak of as having seen in scrap were longer in the direction of the grooves and flanges than "Exhibit 67," were they?

A. Yes, sir.

X Q. 61. And were they broader or larger crosswise of the flanges and grooves?

A. I think the same size.

X Q. 62. And these elongated Wolhaupter rib plates were used both at joints and switch heels, were they?

A. I think so, from the looks of them.

X Q. 63. Did you ever see any of them in the track?

A. Am not sure that I have, don't think so.

X Q. 64. When did you first see the photographs that were submitted to you this morning?

A. They were shown me by Mr. Brown shortly before you came in.

X Q. 65. That is, you saw them for the first time shortly before your evidence was given?

904 A. Yes, sir.

X Q. 66. Do you know who took them?

A. No, sir, I do not.

X Q. 67. Do you know when they were taken?

A. No, sir.

X Q. 68. Did you know of them being taken?

A. No, sir.

X Q. 69. You identified them as photographs at certain portions of the track, simply by your knowledge of the track and surroundings?

A. The ones of McCook I do.

X Q. 70. Are the photographs at McCook photographs of straight track or curved?

A. They show the track between a two and three-degree curve.

X Q. 71. And when you refer to the crossing of the Chicago & Joliet Electric Road, you refer to the crossing on the road between Summit and Lyons?

A. Yes.

X Q. 72. And that is about one hundred and fifty or two hundred yards east of the station at McCook, is it not?

A. It is about four thousand feet.

X Q. 73. These rib Wolhaupter plates that were inserted in the track began about what point and terminated at what point? That is, what portion of the track was equipped with the Wolhaupter rib plates?

A. When the tie-plates were first used they were distributed in the different territories and applied on such new ties as were inserted from year to year for renewals on tangent track. On curves I think we put them on every tie out of face.

X Q. 74. I refer simply to the track in the vicinity of McCook, about which you have been testifying. Suppose we start at the bridge over the Des Plaines River and go West for a couple
905 of miles or a mile beyond the station at McCook. Was that entire section equipped with the Wolhaupter rib plates about 1902?

A. No, sir.

X Q. 75. Tell us just what portion of that section of track was equipped with the Wolhaupter rib-plates about that date.

A. During the summer of 1902 I renewed the ties, I think on the curve at McCook shown on photographs, and if memory serves correctly Wolhaupter rib plates were put on the ties out of face. During the year 1903 we renewed the rail from Corwith to Willow Springs and part of the track relaid with new rail was resurfaced and a great many new ties inserted, and I think the rib Wolhaupter tie-plates were used on all new ties put in.

Recess.

X Q. 76. Now, confining your evidence to this section of the track in McCook from which the photographs, except the one at Corwith, was taken, your recollection is that that portion of the track had the ties renewed in 1902, and at the time that the ties were renewed in 1902, were the Wolhaupter rib plates put in?

A. I think so, but I am not positive.

X Q. 77. Were they put in on all the ties or simply on the renewal ties?

A. On all the ties except a few that might not have been renewed.

X Q. 78. And when were the ties renewed again at this point from which the photographs were taken?

A. A few of them were renewed last year and a good many of them this year.

X Q. 79. And wherever the ties were renewed at this point last year or this year, the Wolhaupter rib plates were not put in, I understand, but tie-plates like those shown on pages 16 and 17
906 of the book "Track" "Exhibit 23" were placed on the renewal ties?

A. Yes, or as we called them Wolhaupter flat bottom tie-plates, on ties inserted last year. Ties inserted this year were equipped with the new style Wolhaupter tie-plates with the two ribs across the bottom.

X Q. 80. When was it, for the first time, that you used on your division tie-plates like those shown on pages 16 and 17 of "Track"?

A. I think we began using them in 1904.

X Q. 81. But you did not put any of them in the track at this point near McCook until 1909, did you?

A. I don't think so. I don't think there's any rotten ties in there.

X Q. 82. And between 1902 and 1909 there were no renewal- of ties or tie-plates at this point about McCook, is that right?

A. Not on that particular curve, I don't think. Yes, there was too, I am wrong on that. We laid rail there in 1903 and there might have been odd ties put in at that time.

X Q. 83. In 1902, when you renewed the ties at this point at the McCook curve, as we will call it, what was the weight of the rail on this west-bound track?

A. I am not sure whether it was 66 or 75 pounds.

X Q. 84. And you changed the weight of the rail at this point in 1903 to what weight?

A. 85 pounds.

X Q. 85. And have you maintained this same weight there or increased it since?

A. Same rail, but changed the plates.

X Q. 86. When did you change the plates, at the time you made the 85-pound rail?

A. Shortly after, when the surfacing gang got to it.

907 X Q. 87. Well, it was right in connection with the relaying?

A. Yes, the surfacing gang follows right up behind.

X Q. 88. So that these Wolhaupter rib plates which still remain in the ties at the McCook curve were put in in 1903?

A. Yes, sir.

X Q. 89. Have any of these plates, I mean the ribbed plates, been renewed or replaced except with the plates like those shown on pages 16 and 17 of "Track," that were placed on the renewal ties? I mean have you put in at the McCook curve any new ribbed Wolhaupter plates since 1903?

A. Not to my knowledge.

X Q. 90. Where were the plates like those shown on pages 16 and 17 of "Track" placed in your division in 1904?

A. Well, they were distributed to different points where we needed them.

X Q. 91. Were they largely used?

A. Yes, sir, they were our standard at that time.

X Q. 92. Who manufactured them, at that time, in 1904?

A. I am unable to say.

X Q. 93. Who manufactured the Wolhaupter rib plates?

A. I can't say.

X Q. 94. You say that we call the plates like those shown on pages 16 and 17 of "Track," Wolhaupter Flat Bottom Tie Plates. Whom do you mean by "we"?

A. Well, the railroad men, I suppose.

X Q. 95. But who, besides yourself, have you heard style these plates the Wolhaupter flat bottom tie-plates?

A. The foreman.

X Q. 96. And who else?

908 A. I am unable to say.

X Q. 97. And when did you and the foreman begin calling these plates of this description "Wolhaupter Flat Bottom Plates"?

A. At the time they were received, I presume.

X Q. 98. Well, could you get outside of the domain of presumption and come into that of fact, and tell us when it was that this name was given to these plates?

A. No, I can not.

X Q. 99. These plates, like those shown on pages 16 and 17 of "Track" have shoulders on them, have they not, parallel to the rail on the upper surface?

A. Yes.

X Q. 100. And the grooves are parallel to the rail, are they not?

A. Yes, supposed to be.

X Q. 101. And the bottom have no flanges or projections of any kind, have they?

A. No, sir.

X Q. 102. And the Wolhaupter plates that you had been using had no shoulder on the upper surface at all, did they?

A. No, just like this (pointing to "Exhibit No. 67").

X Q. 103. And the top corrugations were parallel to the grain of the tie and at right-angles to the rail, were they not?

A. Yes, sir (referring to "Exhibit No. 67").

X Q. 104. And the Wolhaupter rib plate used before that time had deep flanges on the bottom that engaged in the tie parallel to its grain and at right angles to the rail, did they not?

A. Yes, the ribs, as we call them.

X Q. 105. So that the two tie-plates which you say you and the Foreman called Wolhaupter Ribbed plates and Wolhaupter Flat Bottom Plates were not very much alike in appearance, were they?

909 A. No, sir.

X Q. 106. And so far as appearance and configuration were concerned they were about as different as any two tie-plates could be, were they not, and still be tie-plates?

Col. Brown: Objected to as irrelevant and as calling for secondary evidence, the tie-plates themselves being the best evidence as to their similarities and dissimilarities.

A. Yes, they were quite different.

X Q. 107. How did you then come to call the plates like those shown on pages 16 and 17 of "Track," Wolhaupter Flat Bottom Plates?

A. I can't tell you that, being that we were all so used to the Wolhaupter plate, I presume.

X Q. 108. So you had to give a name and took it that the new plate was Wolhaupter as well as the others?

A. Well, of course, we didn't know.

X Q. 109. But there was nothing in the resemblance of the new plate to the old that suggested to you that the new plate was a Wolhaupter plate, was there?

A. Well, I don't know who furnished these plates.

X Q. 110. What I wanted to know was whether there was anything in the style or shape of the new plate like the ones shown in "Track," pages 16 and 17, that by its resemblance to the Wolhaupter ribbed plates, suggested the name "Wolhaupter" as the name for the second plate?

A. I don't know.

X Q. 111. I don't mean to other people, but to you yourself. Was there anything in the resemblance of the Wolhaupter ribbed plate, "Exhibit 67," and the plate shown in "Track," pages 16 and 17, that suggested that the name "Wolhaupter" should be applied to the second plate?

910 A. No, I don't know as there was. Track men have different names. I have heard lots of them call them flat bottom standard tie-plates, also.

X Q. 112. About what portion, would you say, of the second style plates is now in track at second curve? I mean the flat bottom plates, without ribs.

A. Not very many.

X Q. 113. And about how many, or what proportion, of the plates at the McCook curve are the plates with top shoulder, grooves on top parallel to the rail and two ribs on bottom crosswise of the tie?

A. I should judge one-fourth. About one-fourth.

X Q. 114. Now, these plates, referred to in the last question, with ribs on the bottom, are about as different from the Wolhaupter ribbed plate No. 67, as the plates shown in "Track," pages 16 and 17, are they not?

A. About so.

X Q. 115. These plates last inserted have bottom ribs but they run crosswise of the tie instead of parallel to the grain as in the Wolhaupter ribbed plate?

A. Yes, sir.

X Q. 116. I suppose you don't know who manufactured these plates that were last inserted?

A. Well, they are manufactured at Joliet, most of them, made right there at the mills.

X Q. 117. But I mean who it was supplied them to the Road?

A. No, sir, I don't.

X Q. 118. And you would make the same statement about how they come to be called Wolhaupter Flat Bottom Ribbed plates that you did about the other plates like those shown in "Track"?

A. No, I don't know how. Some call them flat bottom tie-plates, some rib, and some just flat bottom plates.

X Q. 119. And this name of new style Wolhaupter tie-
911 plate or flat bottomed ribbed Wolhaupter plates just happens to be a way that you and the Foreman refer to them at times?

A. Yes, we call them flat bottom Wolhaupter tie-plates, or a flat bottom plate, just as the occasion may be.

X Q. 120. About how much of the track in length is included in this McCook curve?

A. You mean the curve just shown on the picture?

X Q. 121. The whole curve.

A. About one hundred feet.

X Q. 122. And it's a two to three degree curve?

A. Between two and three degree.

X Q. 123. And an upgrade to the west?

A. Slightly.

X Q. 124. And the second track was laid in 1905?

A. Yes, the summer of 1905.

X Q. 125. And the old track was used as a west-bound and the new as an east-bound track?

A. At that point, yes.

X Q. 126. Referring to these elongated Wolhaupter ribbed plates that you saw in the scrap heaps, from what point or points did you understand they had been taken?

A. I don't know, I couldn't say. I just happened to see them.

X Q. 127. But you could tell from their appearance that they had been actually used in track at rail joints and at switch heels?

A. I could.

X Q. 128. On some of them the upper surfaces showed a line of demarcation where the joint had been, and on others the abrasion of the switch working?

A. It showed the sign of rail wear.

X Q. 129. And I understand that the only difference or differences between these plates that you saw in scrap and the one represented by "Exhibit 67" was in length and punching?

912 A. Yes, about as near as I can tell.

X Q. 130. When was it that you were served with subpœna?

A. Last night about 7:30.

X Q. 131. And you had no conversation with any person connected with the Road about your evidence before coming here?

A. No, sir, I didn't know anything about it. I was going to the theatre last night when the Marshal got me.

Redirect examination by Col. Brown:

R. D. Q. 132. Before being served with the subpœna last night did you know, or had you been spoken to, by any person concerning this matter in which you are now testifying?

A. No, sir, I did not know the slightest thing about it.

R. D. Q. 133. When did you first know that you were to be questioned concerning the matters which you have testified to in this examination?

A. About 9:50 or 9:55 this a. m.

R. D. Q. 134. When did you first talk with me or with Mr. Bell or with any person connected with or on behalf of the Railroad Supply Company concerning the matters that you have been testifying about?

A. About ten o'clock this morning.

R. D. Q. 135. When did you first meet me or Mr. Bell to know either of us?

A. I met you about 10 a. m. and Mr. Bell a few minutes later.

R. D. Q. 136. Have you any interest direct or indirect in this suit?

A. No, sir, none whatever.

R. D. Q. 137. And you came here solely because you were served with a subpœna by the U. S. Marshal last evening?

913 A. Yes, sir.

R. D. Q. 137. And you were introduced to Mr. Cooke and Mr. Reed by Mr. Brown just before the deposition began, were you not?

A. Yes, sir.

Examination closed.

T. THOMPSON.

And thereupon adjournment was taken until Wednesday, May 18, 1910, at 10 o'clock a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, May 18, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

And thereupon, E. N. LAYFIELD, a witness produced on behalf of the complainant, having been first duly cautioned and sworn, testifies in answers to interrogatories propounded by complainant's counsel, Col. Brown, as follows, to-wit:

Q. 1. Please state your name, age, residence and occupation?

A. Elwood N. Layfield, age 38, 6258 Stewart avenue, Civil Engineer.

Q. 2. Where are you employed?

A. I am now employed by the B. & O. Railroad.

Q. 3. In what capacity or position?

A. I am Division Engineer since the first of April. Previous to

that for five years I was Chief Engineer of the Chicago Terminal Transfer Railroad which has been absorbed by the B. & O.

914 Q. 4. State whether or not you are familiar with the road bed, tracks and appliances used in track of the Chicago Terminal Transfer which I believe *is* the official name of the Road before its absorption by the B. & O. System, at and adjacent to Harvey, Illinois?

A. Yes, I am.

Q. 5. Please look at the photographs that I now hand you numbered 1 to 11, both inclusive, and state if you recognize the road bed and track therein shown and can identify the same?

Mr. Reed: Objected to as irrelevant, immaterial and not proper rebuttal.

A. I can identify some of them. I can identify No. 4, No. 5, No. 7, No. 10 and No. 11, but the others I couldn't positively identify.

Q. 6. Please look at the photograph No. 4, state what track it represents, where located and what tie-plates, if any, are shown on the ties and beneath the rails?

Mr. Reed: Same objection.

A. That photograph represents the track of the former Chicago Terminal Transfer Railroad, now a part of the B. & O. System, near Harvey, Illinois, at a place we call South Holland. In this particular photograph the tie-plates under the rail joints are Servis plates and the others are the plates known as the Q. & W.

Mr. Reed: Motion to strike out answer on the same ground.

Q. 7. I ask you the same question as to photograph No. 5.

Mr. Reed: Same objections.

A. Photograph No. 5 shows the track near the same place. The tie-plates in this photograph are the Wolhaupter plates. I think there are some of the Q. & W. also but they are indistinct in

915 the picture. The most of these are the Wolhaupter plates,— After examining with a magnifyng glass I see that most of them are Wolhaupter plates, but one or two of them seem to be the Q. & W. but I am not positive.

Mr. Reed: Same motion on the same grounds.

Q. 8. I ask you the same question with respect to photograph No. 7?

Mr. Reed: Same objection.

A. My answer is the same as to No. 7 as it was to No. 5.

Mr. Reed: Same motion.

Q. 9. I ask you the same question as to photograph No. 10.

Mr. Reed: Same objections.

A. Photograph No. 10 shows both the Wolhaupter and Q. & W., the Q. & W. predominating. This piece of track is located just south of Harvey at what we call the South Holland curve.

Mr. Reed: Same motion.

Q. 10. I ask you to answer the same question with respect to photograph No. 11.

Mr. Reed: Objection repeated.

A. Well, this track is on the same curve and the plates are nearly all, if not quite, Q. & W., excepting under the joints.

Mr. Reed: Same motion.

Q. 11. And these photographs Nos. 4, 5, 7, 10 and 11 you say you identify, but are not certain, as to the other photographs?

A. Well, I couldn't swear to my own knowledge that they are the tracks of the Road in question, as there is nothing shown in the background by which I could identify them.

Q. 12. Referring now to the photographs Nos. 4, 5, 7,
916 10, and 11 only, state, if you know, just when the several tie-plates shown therein were installed in track at the points illustrated?

Mr. Reed: Objected to as leading.

A. The Q. & W. plates were put in the summer of 1899. The Wolhaupter plates have been put in at various times subsequently. The Servis were put in at the same time the Q. & W. were in 1899.

Mr. Reed: Motion to strike out repeated.

Q. 13. And how do you know that the Q. & W. and the Servis plates were installed in 1899?

Mr. Reed: Same objection.

A. Because I entered the employ of the Company in March, 1899, and was engaged on that work.

Q. 14. Which of the five photographs that you have identified show tie-plates located under rail joints?

A. No. 4; No. 6 shows a joint but it is on the edge of the picture and not very clear; No. 10 shows a joint also, and also No. 11.

Q. 15. And what kind of a joint and what kind of a tie-plate under it are shown in photographs Nos. 4, 10 and 11?

A. The joints are known as the American Continuous Joint and the plates the Servis plates.

Q. 16. And do you know when the Servis plates were installed in track under those joints?

A. In 1899.

Q. 17. And for what purpose, if you know?

A. For the purpose of protecting the ties and holding the track to gauge.

(Here follow diagrams marked pages 917 to 920.)

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--xx--

THE RAILROAD SUPPLY COMPANY
Complainant } In Chancery.
vs.
THE KART STEEL COMPANY and } No. 29,294.
GUILFORD S. WOOD.
Defendants.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

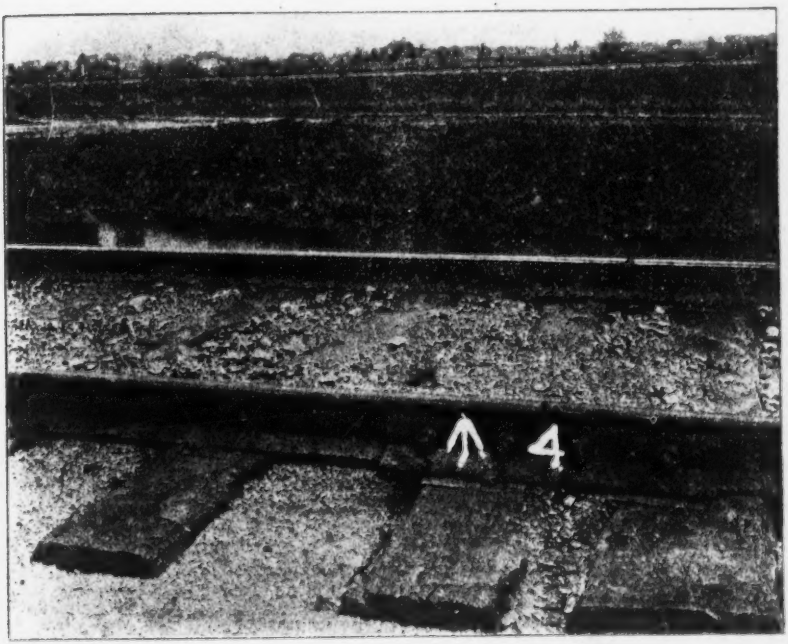
--xx--

THE RAILROAD SUPPLY COMPANY
Complainant } In Chancery.
vs.
THE ELYRIA IRON & STEEL CO. } No. 7,668.
Defendant.

"Complainant's Exhibit No. 106, Photograph Chicago Terminal Road Track near Harvard, Illinois."

6/18/1910.

E. Wilkins
Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--vs--

THE RAILROAD SUPPLY COMPANY : Complainant } In Chancery.
vs. :
THE HART STEEL COMPANY and GUILFORD S. WOOD, : Defendants. } No. 29,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

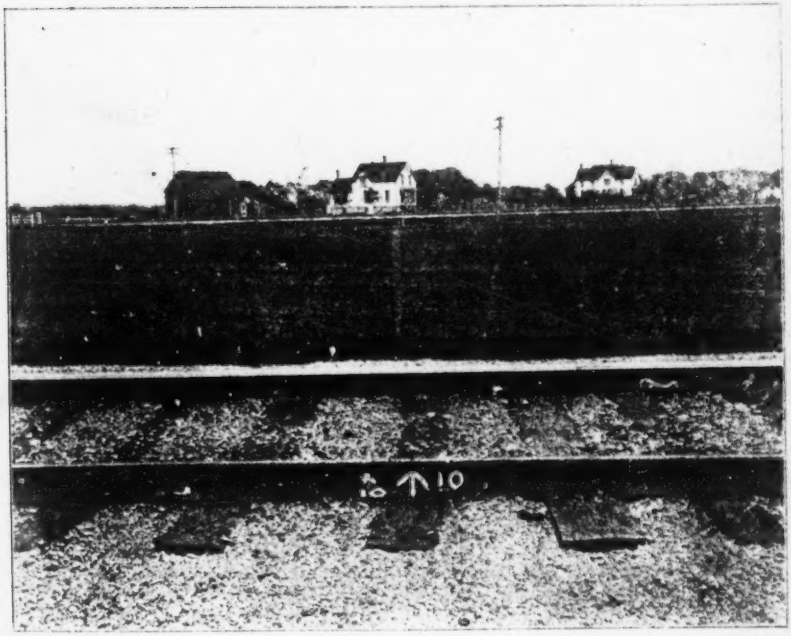
--vs--

THE RAILROAD SUPPLY COMPANY : Complainant } In Chancery.
vs. :
THE KLYRIA IRON & STEEL CO. : Defendant. } No. 7,668.

"Complainant's Exhibit No. 109, Photograph Chicago Terminal Road Track near Harvard, Illinois."

8/18/1910

Notary Public.



Col. Brown: The photographs identified by the witness, Nos. 4, 5, 7, 10 and 11 are offered in evidence as exhibits and marked "Complainant's Exhibits Nos. 106, 107, 108, 109 and 110, respectively, Photographs Chicago Terminal Road Track near Harvey, Ill." G. R. Wilkins, Notary Public, 5/18/10.

921

Mr. Reed: Objected to as irrelevant, immaterial, and not competent rebuttal testimony.

Q. 18. Please look at the book called "Track" Complainant's Exhibit No. 23," on pages 8 and 9, on page 11, and state whether or not on these pages, and also on page 12, there is illustrated the Wolhaupter, Q. & W. and the Servis types of tie-plate which you have found in the photographs just introduced in evidence?

Mr. Reed: Same objection.

A. Yes, those represent the plates I have been speaking of.

Q. 19. I wish you would refer again to the photographs just introduced as "Exhibits Nos. 106, 109 and 110," and in which you say are illustrated the American Continuous Rail Joint and describe that joint so that the court will understand something of its nature and construction

A. The American Continuous Rail Joint differs from the ordinary angle bar in having the bottom portion of the bar turned under the rail for the purpose of giving additional strength. The ordinary angle bar fits under the head of the rail and on top of the flange of the rail, one bar being on each side of the rail and held together by bolts through the rail with a wedge action. The ordinary bar does not go under the rail, the base of the rail resting on the tie unless something is put in between. This American Continuous Bar, as stated before, folds under so that the bottom of the rail rests on the portion of the joint folded under instead of on the tie. It is fastened by bolts in exactly the same manner as the ordinary angle-bar. The portion folded under goes nearly to the center of the rail so as to nearly meet the portion folded under from the other side.

922

Q. 20. And these folded under or inward laterally extending parts, in the instances shown in these two exhibits, rest upon a Servis tie-plate interposed between the rail joint bases and the tie, do they?

A. Yes, sir.

Q. 21. And the adjacent ends of two continuous adjacent rails are bolted together to the same rail joint, in rail joint construction, are they?

A. That's right.

Q. 22. Have you any interest direct or indirect in the outcome of this litigation in which you are testifying, or are you connected directly or indirectly with either of the parties?

A. No, sir.

Q. 23. And did you come here in response to a subpœna?
A. I did.

Direct examination closed.
Cross-examination waived.

ELWOOD N. LAYFIELD.

Notice by Mr. Brown.

Complainant's counsel takes this opportunity to notify counsel for defendant that so much of the notice for taking proofs in rebuttal, dated May 5, 1910, as refers to the taking of depositions at Pittsburg, May 25th to May 17th, both inclusive, 1910, is hereby recalled and notice is given that the depositions of the Pittsburg witnesses will be taken on another date to be subsequently noticed to counsel.

Notice is now given that on Wednesday, May 25, 1910,
923 complainant will proceed before W. H. Doolittle, Esq., Clerk of the United States Circuit Court at Utica, New York, in the office of said Doolittle, at said Utica, New York, or before other competent officer beginning at the hour of 10 o'clock in the forenoon to take the deposition of B. Harley, Road Master, D. L. & W., and such other witnesses as may be then and there produced on behalf of complainant and that counsel will proceed from Utica upon the adjournment or completion of the examination at that point to Boston, Mass., where on Thursday, May 26, 1910, beginning at the hour of 10 o'clock in the forenoon, before Charles K. Darling, Clerk of the United States Circuit Court, for the Eastern District of Massachusetts, or any other competent officer, at the office of said Clerk in the Federal Building, Boston, Mass., complainant will take proofs in rebuttal on behalf of complainant, the witness to be examined being John Savage, Road Master, N. Y., N. H. & H. Ry., Boston, Mass., and such other witnesses as may be then and there produced on behalf of complainant, the examination to be continued from day to day until completed.

And thereupon, CHARLES P. COGSWELL, JR., a witness produced on behalf of the complainant, having been first duly cautioned and sworn, testifies in answer to interrogatories propounded by complainant's counsel, Col. Brown, as follows, to-wit:

Q. 1. Please state your name, age, residence and occupation?
A. Charles P. Cogswell, Jr., 40 years, Chicago, Illinois, Salesman Railroad Supply Company.
Q. 2. How long have you been connected with The Railroad Supply Company?
A. Since February, 1904.

Q. 3. Previous to your employment by The Railroad Sup-
924 ply Company, what education or experience have you had with the construction or inspection of track and devices used in track by railroads?

A. I am a graduate of the Massachusetts Institute of Technology, have been employed in the engineering department of the New York, New Haven and Hartford Railway, the Baltimore & Ohio Southwestern, and the Chicago & Great Western.

Q. 4. And in these positions or otherwise what opportunity have you had prior to entering the employ of the complainant to familiarize yourself with railroad track construction and devices employed therein?

A. I have been engaged in track work, that is track engineering, and latterly in charge of track laying and track maintenance.

Q. 5. And since coming into the employ of complainant what have been your general duties and state what opportunity you have had to inspect track laying and track conditions?

A. My duties have been primarily that of salesman but I have had considerable amount of track inspection work to do in connection with my duties and have been brought constantly into contact with engineers and track officials and have made many track inspections.

Q. 6. State whether or not during the month of April, 1910, you made a track inspection near Harvey, Illinois, of the road known as the Chicago Terminal Transfer and took or caused to be taken any photographs of the track at the place named

A. Yes, I made an inspection at this point and had taken photographs at that point.

Q. 7. Please look at the photographs I now show you marked picture- Nos. 4, 5, 7, 10 and 11, and introduced as "Complain-
925 ant's Exhibits Nos. 106 to 110," inclusive, and state if you can identify these photographs, and if so state when and by whom they were taken?

Mr. Reed: Objected to as irrelevant, immaterial and not proper rebuttal.

A. I was present when those pictures were taken, I recognize them, April 28, 1910, they were taken. They were taken by Mr. Shaw, an operator in the employ of Copelin, the photographer.

Q. 8. Please look at these photographs in the order of their numbers and state in detail as to each one, first the exact location of the track illustrated in the photograph, and the kind of tie-plate shown in the photograph?

Mr. Reed: Same objection.

A. Picture No. 4 "Exhibit No. 106," was taken on the line of the Chicago Terminal Transfer from Harvey to Chicago Heights; Second joint north of second highway crossing south of water tank, taken on the west rail; 70 pound rail, continuous joint. Intermediate plates Q. & W. joint plates, Servis plates.

Picture No. 5, "Exhibit No. 107," same Road taken four telegraph poles north of South Holland switch, taken on west rail; improved Wolhaupter plates without shoulders.

Picture No. 7, "Exhibit No. 108," same Road, picture taken three rails north of South Holland switch on west rail; rail 70 pounds; improved Wolhaupter plates without shoulders.

Picture No. 10, "Exhibit No. 109," same Road, about the same position as No. 9, but on west rail inside of curve about three degrees, South Holland station, plates Q. & W., rail 70 pound.

Picture No. 11, "Exhibit No. 110, same Road as No. 10, taken at South Holland station, inside of curve about three degrees on west rail; intermediate plates Q. & W., joint plates Servis; 70 pound rail.

926 Q. 9. The typewritten memoranda on the back of these exhibits represents what?

A. They represent the notes which I took at the time the pictures were taken, typewritten and placed on these photographs under my instructions and directions.

Q. 10. Please look at the pictures with the typewritten memoranda on the back, Nos. 1, 2, 3, 6, 8, and No. 9, which I now hand to you and state what these photographs represent, what the typewritten memorandum on each represent and when the photographs were taken.

Mr. Cooke: Same objection.

A. These pictures were all taken the same time as the others I identified on the same date and under my directions and these notes made the same way.

Mr. Cooke: Motion to strike out.

Q. 11. Now please similarly run through these photographs last shown you in the order of their numbers and state the location of each track, the weight of rail and the tie-plate shown on each rail.

Mr. Reed: Objections renewed.

A. Picture No. 1, taken on the Chicago Terminal Transfer Railway from Harvey to Chicago Heights, about eight hundred feet south of the water tank just south of the works of the Buda Mfg. Company, on the west rail, two and a half rail lengths south of the slow signal; Q. & W. plates, 70 pound rail.

Photograph No. 2, on same Railroad, ten rail lengths south of the slow signal mentioned in picture No. 1; Q. & W. plates, 70 pound rail.

Picture No. 3, same Railroad; about twenty rail lengths south of the slow signal mentioned in picture No. 1; Q. & W. plates, 70 pound rail.

Picture No. 6, same Railroad, two telegraph poles north of
927 South Holland switch; improved Wolhaupter plates without shoulder; 70 pound rail.

Picture No. 8, same Railroad, three rails south of South Holland station, taken on east rail on outside of curve about three degrees; Q. & W. plates.

Picture No. 9, same Railroad, six rail lengths south of South Holland station, taken on east rail on outside of curve about three degrees, 70 pound rail; Q. & W. plates.

Mr. Reed: Same objection and motion to strike.

Col. Brown: Complainant's counsel offers in evidence the six

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--xx--

THE RAILROAD SUPPLY COMPANY
Complainant
vs.
THE HART STEEL COMPANY and GILFORD S. WOOD
Defendants

In Chancery.
No. 29,294.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

--xx--

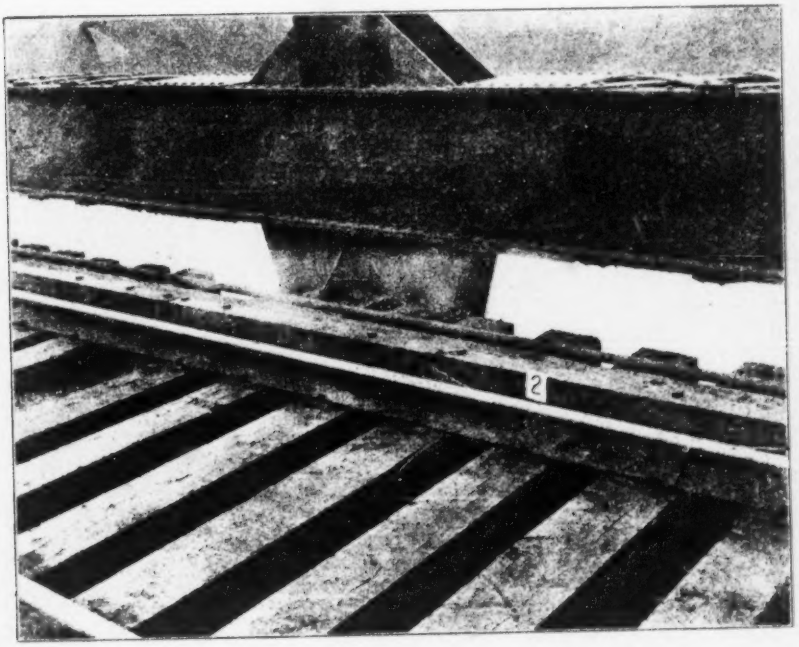
THE RAILROAD SUPPLY COMPANY
Complainant
vs.
THE ELYRIA IRON & STEEL CO.
Defendant

In Chancery.
No. 7,668.

Complainant's Exhibit No. 118, Cogswell Inspection Photograph, Chicago Terminal Transfer Tracks, Chicago."

E. Wilkins
Notary Public.

5/18/1910.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

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THE RAILROAD SUPPLY COMPANY Complainant	)	In Chancery.
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IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

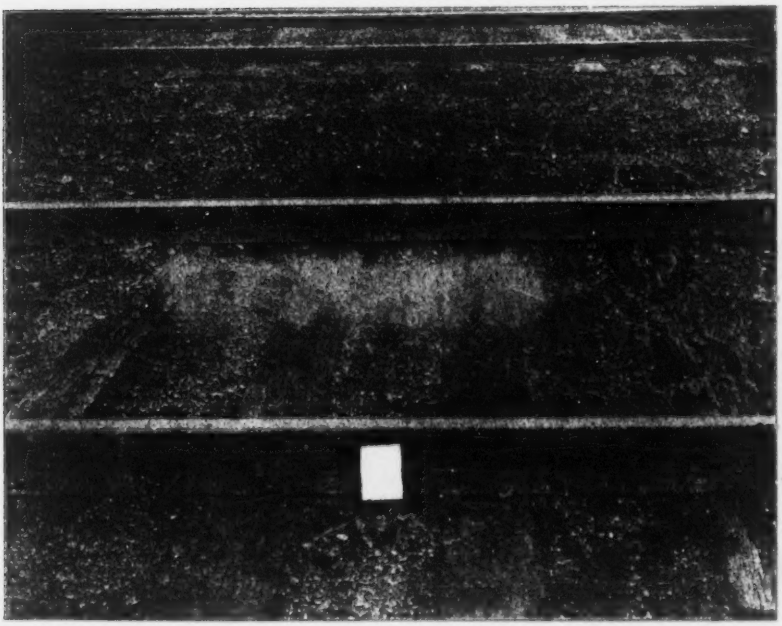
--xx--

THE RAILROAD SUPPLY COMPANY Complainant	)	In Chancery.
vs.	)	
THE ELYRIA IRON & STEEL CO. DEFENDANT.	)	No. 7,668.

Complainant's Exhibit No. 125, Cogswell Inspection Photograph, Chicago Terminal Transfer Tracks, Chicago."

G R Wilkins
Notary Public.

6/18/1910.



photographs last referred to by the witness and the same are identified as "Complainant's Exhibits Nos. 111, 112, 113, 114, 115 and 116, Cogswell Inspection Photographs, Chicago Terminal Track, Harvey, Illinois," G. R. Wilkins, Notary Public, 5/18/10.

Mr. Reed: Exhibits objected to on same ground.

Q. 12. Please look at the photographs which I now hand you, pictures Nos. 1 to 11, inclusive, and state when and by whom they were taken, what the photographs represent and what the typewritten notes on the back of each represent?

Mr. Reed: Same objection.

A. These were all taken under my direction on the line of the Chicago Terminal Transfer, April 6, 1910; and the notes on the back were taken by myself and put on the photographs under my directions.

Mr. Reed: Motion to strike out.

Q. 13. Now please go through those photographs and state what part of the track each of the photographs represent and what tie-plate is shown in each photograph?

Mr. Reed: Objections repeated.

A. Picture No. 1, Wolhaupter two shoulder tie-plates; this
928 is taken one rail length south of the Taylor street viaduct at the Chicago Depot yards of the Chicago Terminal Transfer Railroad, taken on the east rail; 80 pound rail.

Picture No. 2, same Road on C. T. T. draw-bridge between Taylor street and 12th street, outbound track on west rail; 80 pound rail; long flange Wolhaupter plate; taken on the gauge side of the rail.

Picture No. 3, same Railroad; taken on north end of draw span; C. T. T. bridge between Taylor street and 12th street; taken on west rail of outbound track, 80 pound rail; taken on gauge side of rail; long flange Wolhaupter without shoulder.

Picture No. 4, same Railroad, 80 pound rail; long flange Wolhaupter plate taken one thousand feet more or less west of 48th avenue viaduct at beginning of curve; taken on north rail of inbound track.

Picture No. 5, taken on inbound track, in south rail; 80 pound rail; long flange Wolhaupter plate; same Road.

Picture No. 6, same Road, taken on inbound track, 80 pound rail; long flange Wolhaupter plate; taken on north rail about thirteen rail lengths west of point of switch of the 48th avenue yard.

Picture No. 7, same Road, taken a rail length east of block signal No. 72 near 52nd avenue viaduct; 80 pound rail, taken on north rail of east bound track; long flange Wolhaupter plate.

Picture No. 8, same Road, 80 pound rail; taken on west-bound track on south rail; Wolhaupter plate; about fifty feet east of Telltale, just east of 52nd avenue viaduct.

Picture No. 9, same Road, taken five poles west of West Telltale, 52nd avenue viaduct; taken on the east-bound track on north rail; Wolhaupter plates and 80 pound rail.

(Here follow diagrams marked pages 929 to 932.)

933 Picture No. 10, same Road, Wolhaupter plates, taken one more pole west than picture No. 9, 80 pound rail.

Picture No. 11, same Road, taken a joint just west of picture No. 10, long flange Wolhaupter plate, taken on north rail of east-bound track.

Mr. Reed: Objection and motion renewed.

Col. Brown: The pictures Nos. 1 to 11 just described by the witness are now introduced in evidence as "Complainant's Exhibits Nos. 117, 118, 119, 120, 121, 122, 123, 124, 125, 126 and 127 respectively, Cogswell Inspection Photographs, Chicago Terminal Transfer Tracks, Chicago," G. R. Wilkins, Notary Public, 5/18/10.

Mr. Reed: Same objection.

Q. 14. State whether or not the photographs, "Exhibits 106 to 127," both inclusive, which you have identified correctly represent the condition of the track and track devices at the places named as they were on the dates when these several photographs were taken?

A. They do.

Q. 15. What do you know concerning the date when any of the tie-plates shown in any or all of these exhibits last mentioned were installed in track?

A. I have had information from the Road Master as to what his knowledge was as to the time of the installation and the notes on the pictures agree with that information.

Mr. Reed: Objected to on the same ground and also as hearsay.

Q. 16. I notice on "Exhibit No. 127," in the foreground of the picture the three-left-hand ties are scored or checked adjacent to the tie-plate. Please state, if you know, what is the cause of that?

Mr. Reed: Same objection.

934 A. That appears to have been caused by the driving in of the tie-plates into position after the rail had been laid, which makes those scores.

Mr. Reed: Objections repeated.

Q. 17. Please look at the photograph "Exhibit No. 126" and examine the two left-hand ties, the ends of which are shown in the foreground, and which ties appear to be cracked or split, and state whether or not, in your opinion, this was caused by the use of the tie-plates of the character there shown.

Mr. Reed: Same objection and also as calling for a conclusion by the witness.

A. In my opinion those scores are produced largely by the driving in of the plates under the ties, as in No. 11, "Exhibit No. 126."

Q. 18. You referred in your answer, I take it, to the scoring or checking on the top of those two ties next adjacent to the tie-plates, did you?

Mr. Reed: Same objection.

A. Yes, sir.

Q. 19. I think you did not then comprehend my question. What I desire to know is your opinion as to whether or not the splitting of the tie, as a whole, was produced by the use of the tie-plate shown in the picture?

Mr. Reed: Same objection.

A. In my opinion, this checking and splitting is a natural weather check and not produced by the tie-plate.

Q. 20. In the left-hand tie outside of the rail, and in the middle tie between the rails, there seems to be an enlargement, circular in general form, of the split portion of the tie. What causes that if you know?

Mr. Reed: Objections renewed.

A. They appear to be caused by knots in the ties.

935 Q. 21. State whether or not in your experience and observations a tie with a knot in it, placed in track, will deteriorate, rot, check or tend to disintegrate in service more rapidly than would a whole or clean tie without knots of the same material under the same conditions?

Mr. Reed: Same objections.

A. Generally timber will check and rot more about a knot than in sound or clear timber.

Q. 22. What is the fact regarding the character of the service to which these tracks shown in the Chicago Terminal photographs last introduced in evidence, "Exhibits Nos. 117 and 127, inclusive, with respect to the tonnage and number of trains per day passing over the tracks, if you know?

Mr. Reed: Objected to as immaterial, irrelevant, not rebuttal and witness having shown no qualification or knowledge on the subject.

A. Nos. 117 to 119 are in the Chicago yard near the passenger station and under very heavy traffic as there is much switching going on over them. Nos. 120 to 127, are on the main line and are under heavy traffic but not as heavy as those about the depot as there is not so much switching.

Q. 23. Just what is the Chicago Terminal Railroad?

A. The Chicago Terminal Railroad is a switching railroad or loop which accommodates several railroads coming into Chicago.

Mr. Reed: Same objections.

Q. 24. Do its tracks cross and connect with these other Roads that you have just referred to?

A. They have switching connections with a large portion of the Railroads entering Chicago.

Q. 24. And by your answer stating that the Terminal is a switching railroad which accommodates several Railroads, I under-

936 stand, for example, that a carload of freight coming in from one Road and billed through to a point on another Road is

transferred from the first road to the second over the tracks of the Chicago Terminal Railroad, is that the idea?

Mr. Reed: Same objections.

A. Yes, that's so.

Recess.

Q. 25. Please look at the pictures numbered 1 to 6, inclusive, which I now hand to you and state if you can identify these photographs, and if so, where they were taken and when and by whom?

Mr. Cooke: Objections repeated.

A. These pictures were taken on the line of the Chicago, Rock Island & Pacific on their line just west of the Englewood station, Cook county, taken April 7, 1910, under my direction by the operator, Mr. Shaw, of the Copelin studio.

Q. 26. State whether or not the typewritten notes on the back of each of the pictures were placed there under your direction or by you and represent notes which you made at the time you inspected the Rock Island track at the point shown in the picture.

Mr. Reed: Objections repeated.

A. These descriptions were typewritten under my direction from notes taken at the time exposures were made and placed on the photographs.

Q. 27. Please look at these pictures and state, in the order of their number, where each picture was taken, the point of the road, the weight of the rail and the tie-plate used?

Mr. Reed: Same objections.

A. Picture No. 1 was taken on the Rock Island tracks west
937 of the Englewood station, taken fifty feet west of the west end of the Wentworth avenue bridge on the north rail of east-bound track on the outside of curve about one degree; 80 pound rail; old style Wolhaupter.

Picture No. 2, same Railroad, old style Wolhaupter, 80 pound rail, taken one hundred feet west of the west end of the Wentworth avenue bridge, north rail east-bound track outside of curve about one degree.

Picture No. 3, same Road; three Wolhaupter plates, taken 60 feet east of signal tower at 66th street; taken on outside of one degree curve of north rail of east-bound track; 80 pound.

Picture No. 4, same Road; taken on north rail of west-bound track half way between 66th and 67th street; at end of guard rail to frog on short tangent between two curves; 80 pound rail; Wolhaupter plate.

Picture No. 5, same Road; two Wolhaupter plates, 80 pound rail; north rail west-bound track, main line opposite J. J. & C. W. Mogg coal house.

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--XX--

THE RAILROAD SUPPLY COMPANY
Complainant } In Chancery.
vs.
THE HART STEEL COMPANY and } No. 29,294.
GUILFORD S. WOOD,
Defendant. }

IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

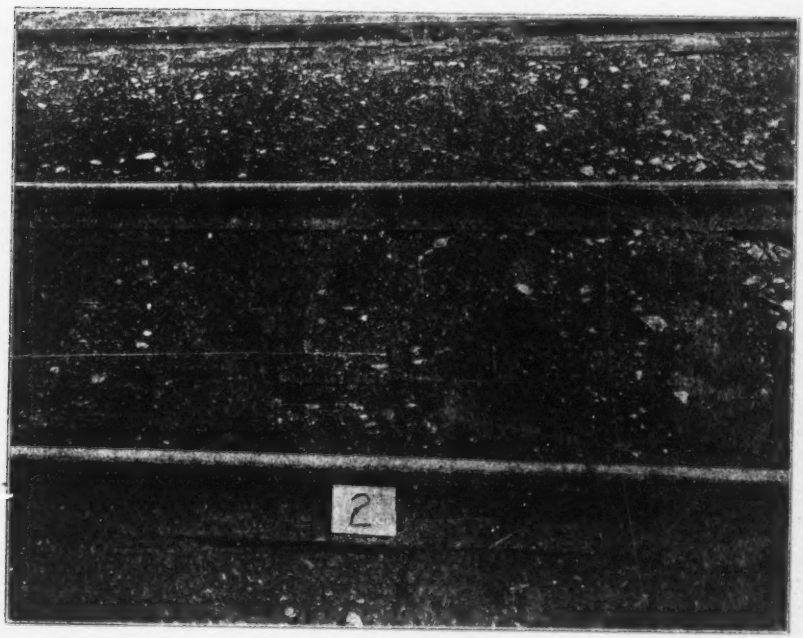
--XX--

THE RAILROAD SUPPLY COMPANY }
Complainant, : In Chancery.
vs. }
THE ELYRIA IRON & STEEL CO. : No. 7,668.
Defendant. }

"Complainant's Exhibit No. 129, Cogswell Inspection Photograph, C.R.I. & P. Tracks, Chicago."

5/13/10.

E. Wilkins
Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--XX--

THE RAILROAD SUPPLY COMPANY :
Complainant) In Chancery.
vs. :
THE HART STEEL COMPANY and) No. 29,294.
GUILFORD S. WOOD. :
Defendant.)

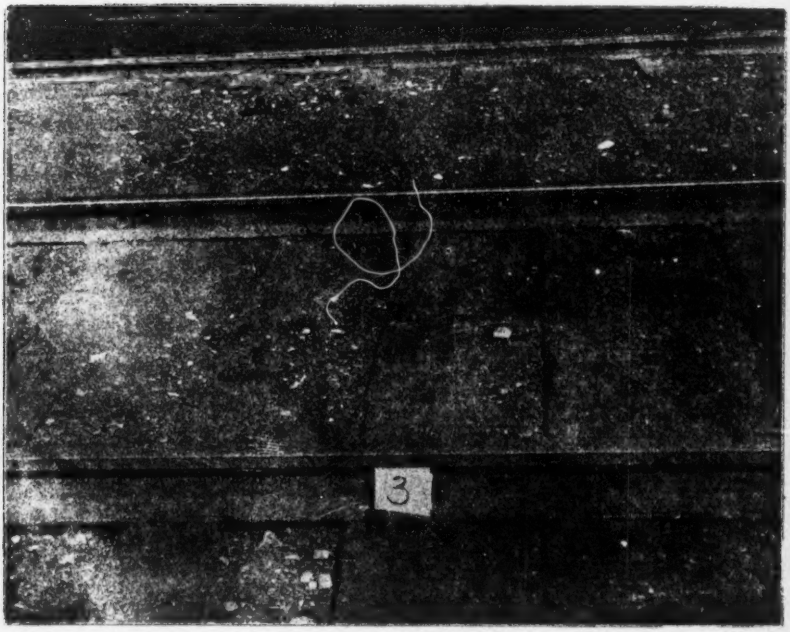
IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

--XX--

THE RAILROAD SUPPLY COMPANY :
Complainant,) In Chancery.
vs. :
THE ELYRIA IRON & STEEL CO.) No. 7,656.
Defendant. :

"Complainant's Exhibit No. 130, Cogswell Inspection Photograph, C.R.I. & P. tracks, Chicago."

5/18/10. J. R. Wilkins
Notary Public.



IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS.

--XX--

THE RAILROAD SUPPLY COMPANY
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IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

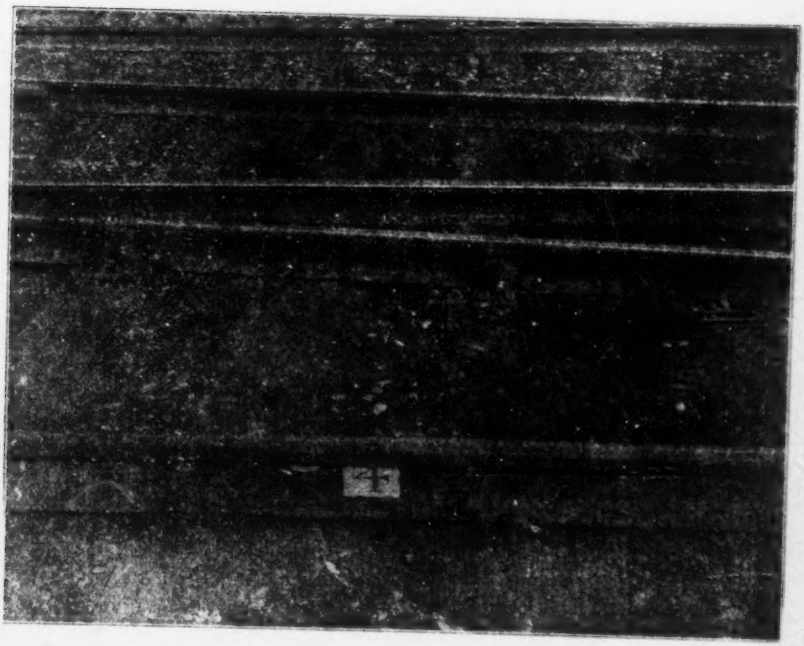
--XX--

THE RAILROAD SUPPLY COMPANY,
Complainant. In Chancery.
vs.
THE ELYRIA IRON & STEEL CO. No. 7,668.
Defendant.

"Complainant's Exhibit No.131, Cogswell Inspection Protograph, C.R.I. & P. Tracks, Chicago."

5/18/10.

Notary Public



Picture No. 6, same Road; taken on north rail of east-bound track; Wolhaupter plate, 80 pound rail opposite center of the Mogg coal house.

Mr. Reed: Objection and motion repeated as to answer.

Q. 27. When you speak of the old Wolhaupter tie-plate, just what do you mean?

A. I mean the sections of Wolhaupter tie-plate that were rolled a number of years ago and which we do not now roll.

Mr. Reed: Same objection and motion as to question and answer.

Q. 28. How does that compare with any of the sections shown on pages 8 and 9 of "Track," "Complainant's Exhibit No. 23"?

Mr. Reed: Same objection.

938 A. The old style Wolhaupter differs from the sections shown on pages 8 and 9 in the fact that the corrugations on the top of the plate were made with sharp angles instead of rounded fillets as they are now manufactured.

Q. 29. And how does that plate compare with the tie-plate, "Complainant's Exhibit No. 67"?

A. The plates shown on the pictures which have just been identified are of the same type as that shown in "Exhibit No. 67."

Mr. Reed: Objections and motion repeated.

Col. Brown: The photographs identified by the witness, pictures 1 to 6, inclusive, are introduced in evidence as exhibits as "Complainant's Exhibits Nos. 128, 129, 130, 131, 132 and 133, respectively, Cogswell Inspection Photographs, C. R. I. & P. Tracks, Chicago," G. R. Wilkins, Notary Public, 5/19/10.

Mr. Cooke: Same objections.

Direct examination closed.

Cross-examination by Mr. Reed:

X Q. 30. All of the Wolhaupter plates shown in these pictures except the ones designated as Wolhaupter two shoulder plate were without shoulders, were they not?

A. Yes, sir.

X Q. 31. And they all had grooved tops and bottom flanges parallel to the grain of the tie and at right angle to the rail?

A. Yes.

X Q. 32. Did the so-called Wolhaupter two shoulder plates have grooved tops?

A. Yes.

X Q. 33. In which direction did the grooves run?

A. At right angles to the rail parallel to the grain of the wood.

(Here follow diagrams marked pages 939 to 944.)

945 X Q. 34. And in what direction did the bottom flanges of the so-called Wolhaupter two shoulder plate run?

A. At right angles to the rail parallel to the grain of the tie.

X Q. 35. All of these photographs were taken under your direction and supervision?

A. Yes, sir.

X Q. 36. And all the information that you have relative to the times when the tie-plates were installed was derived from conversation with the railroad employes?

A. Yes, sir with the exception of some of our own records.

X Q. 37. Well, your records would not show when the plates were installed would they?

A. No, sir, they would only show the years in which shipped.

X Q. 38. The Chicago Terminal is a belt or connecting Road is it not?

A. Yes, sir, it's a belt road.

X Q. 39. How long is it?

A. Well, I can't say Mr. Reed, without looking at their published records, I think in the vicinity of two hundred miles.

X Q. 40. You mean all of its track would aggregate two hundred miles?

A. I think the aggregate of the main track.

X Q. 41. It has no regular passenger schedule for the public has it?

A. Yes, sir, they run a number of regular passenger trains.

X Q. 42. Well, these are merely for suburban service are they not?

A. The trains of the Chicago Terminal itself are only for suburban service but lines which lease the Chicago Terminal run their regular trains over its lines.

946 X Q. 43. And the principal function of the Chicago Terminal is to haul freight cars from one road to another?

A. Yes, that is the principal function of the railroad.

X Q. 44. And over what portion of the Chicago Terminal do other railroads run through passenger trains?

A. I don't think I could answer that without a map.

Cross-examination closed.

Examination closed.

CHARLES P. COGSWELL, JR.

Adjourned to Utica, New York, for Wednesday, May 25, 1910, as per notice.

G. R. WILKINS,
Notary Public.

UNITED STATES OF AMERICA,
State of Illinois, County of Cook, ss:

I, G. R. Wilkins, a notary public, in and for the County of Cook and State of Illinois, do hereby certify that the foregoing depositions of John H. Wallace, M. J. Comerford, T. Thompson, Elwood N.

Layfield, and Charles P. Cogswell, Jr., were taken before me pursuant to the annexed notice, at the offices of Messrs. Poole & Brown, suite 808 Marquette building, Chicago, Illinois, beginning on Monday, May 9, 1910, at 2 o'clock p. m. and continuing by adjournment from day to day until completed on Wednesday, May 25, 1910, as therein appears; that the depositions were taken on behalf of the complainant to be used on the hearing of a certain cause now pending in the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois, in Equity, No. 29,294, wherein The Railroad Supply Company is the complainant and The Hart Steel Company and Guilford S. Wood, the defendants; that the parties to said cause were present at the taking of the same,
947 complainant by its counsel, Col. Taylor E. Brown, and defendants by their counsel, J. Negley Cooke, Esq., and Frank F. Reed, Esq., as therein appears; that before deposing the said John H. Wallace, Michael J. Comerford, T. Thompson, Elwood N. Layfield and Charles P. Cogswell, Jr., were by me duly cautioned and sworn to testify to the truth, the whole truth and nothing but the truth, in the cause aforesaid, and that said rebuttal depositions were reduced in writing on the typewriting machine by Miss D. E. Marmon, a competent typewriter operator, from statements of the said John H. Wallace, M. J. Comerford, T. Thompson, Elwood N. Layfield and Charles P. Cogswell, Jr., and the same were duly subscribed to by the said witnesses in the presence of counsel and before me.

And I do further certify that I am neither attorney nor of counsel for any of the parties to the above entitled cause, nor related by blood or marriage to either of said parties or to said counsel, and am nowise interested in the result of said cause.

I further certify that my fees as notary public and for typewriting, amounting to $118.00 have been paid by the complainant.

I do further certify that the foregoing is a true record of the depositions taken and of the proceedings had before me, pursuant to the agreement aforesaid, between the dates mentioned.

In witness whereof, I have hereto set my hand and affixed my notarial seal, this 25th day of May, A. D. 1910.

[SEAL.] G. R. WILKINS,
Notary Public.

948 In the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD.

UTICA, N. Y., May 25, 1910.

Depositions taken before me, C. W. Higgison, Deputy Clerk, United States Circuit Court for the Northern District of New York, acting by consent of counsel, by special permission at my office, in the Post Office Building, Utica, N. Y., this 25th day of May, 1910, beginning at 4 o'clock in the afternoon, on behalf of the complainant to be used at the final hearing of the above entitled cause.

Present:

Taylor E. Brown, Esq., Solicitor for Complainant.
J. Negley Cooke, Esq., Solicitor for Defendants.
Frank F. Reed, Esq., Solicitor for Defendants.

And thereupon HIRAM M. BUCK, a witness produced on behalf of the Complainant, having been first duly cautioned and sworn upon oath, testified as follows in answer to questions by Mr. Brown:

It is stipulated between Counsel that all objections to the relevancy, materiality, competency and substance of questions
949 and answers, as well as its propriety and rebuttal shall be treated and considered as those specifically made and entered to each question and answer, without the formality of entering or repeating the same. This stipulation to apply to objections as to hearsay and secondary evidence. Objections to the form of question must be taken and entered in each instance.

Q. 1. Please state your name, age, residence and present occupation.

A. Hiram M. Buck; age 39; residence, New York City; Eastern Representative of the Railroad Supply Co.

Q. 2. How long have you been employed by the Railroad Supply Company?

A. I entered their employ about 1901.

Q. 3. Are you familiar with the tie-plates manufactured and sold by that Company?

A. Yes, sir, I am.

Q. 4. State whether or not it is any part of your buisness as Eastern Representative to sell Tie-Plates to Railroads, and whether or not you have so sold.

A. I have acted as salesman for the Company ever since I entered their employ, and have sold tie-plates to various railroads in the East.

Q. 5. Please look at the catalog marked "Complainant's Exhibit No. 22," complainant's green covered catalog, and state whether or not you have sold to Railroads any of the tie-plates shown on pages 3-5 and 7 of this book.

A. Yes, sir, I recognize the plates.

Q. 6. To what Railroads have you sold Wolhaupter tie-plates such as are illustrated in this catalog?

A. N. Y. C. & H. R. R., Boston and Albany Railroad, Rutland Railroad, New York, New Haven and Hartford Railroad,
950 Lehigh Valley Railroad, Delaware, Lackawanna & Western Railroad, Pittsburgh, Shawmut & Northern Railroad, Southern Railway, Norfolk & Western Railway, Seaboard Air Line, Carolina, Clinchfield & Ohio Railroad, Long Island Railroad, American Smelters Securities Co. The sales to the Carolina, Clinchfield & Ohio Railroad was mostly sold to the Meadows Co., who were the contractors for building the road.

Q. 7. Is the Baltimore & Ohio Railroad in your territory, and if so, state whether or not you have sold to that Road any Wolhaupter tie-plates.

A. The Baltimore & Ohio Railroad's General Office in Baltimore is in my territory and the last order I received from them was December, 1908, for one million and thirty thousand plates of the Wolhaupter type.

Q. 8. How long have you been selling the Wolhaupter tie-plates to the Delaware, Lackawanna & Western Railroad?

A. The Railroad Supply Company, according to my office records, sold the Delaware, Lackawanna & Western Railroad Wolhaupter tie-plates before I came with the Company, and either I personally, or some one from the New York office have sold to this Road tie-plates up to the present time.

Q. 9. About how many Wolhaupter tie-plates have been so sold to the Delaware, Lackawanna & Western Railroad each year during this period?

A. Without having gone over the sales each year and adding them up, I would say off-hand, that it would average in the neighborhood of two hundred and fifty or three — thousand plates per year.

Q. 10. Have you had occasion within the last year or so, to go over the road bed or any portion of it of the Delaware, Lackawanna & Western Railroad to ascertain whether or not Wolhaupter tie-plates are actually in use in track on that Road?

951 A. I have examined portions of track on this Road, particularly around the Hoboken Terminal.

Q. 11. If you have any photographs showing any portion of this road bed, please produce the same and state when they were taken and by whom.

A. On April 28th, of this year, I took some photographs of Wolhaupter tie-plates in track and have these photographs with me, which I hereby produce.

Q. 12. Please describe each of the four photographs and state what particular portion of the track is represented therein, and what tie-plate is shown.

A. The first photograph shows the general view of the Hoboken Terminal, and the photographs I produce were taken on the tracks at this point.

Photograph A shows two Wolhaupter 5″ plates with 5/16″ high shoulder, embedded in yellow pine ties; ties installed August, 1907. The ties show no checking, excepting weather check; rail at this point being 91# rail with rock ballast.

Photograph No. B shows 4¼″ Wolhaupter tie-plates with no shoulder embedded in pine ties, track No. 12; no splits in tie, excepting weather check. Rail 91# rock ballast, installed 1907.

Photograph C, 4½-inch Wolhaupter plain tie-plates with double spiking on the outside of in track #13 Terminal, no checking of ties from flanges or spikes. Tie-plates installed 1907.

Q. 13. What are the typewritten notations on the back of these photographs?

A. Memorandums which I made at the time of taking photographs track numbers being given me by Mr. M. E. Smith, Signal Engineer of the D., L. & W. Railroad.

Mr. Brown: The four photographs identified by the witness are offered in evidence and marked as follows: The Terminal
952 photograph as "Complainant's Exhibit No. 134, Buck Inspection Photograph D., L. & W. Terminal, Hoboken Terminal, C .W. Higginson, Special Examiner, 5/25/10," and the three photographs identified as A, B and C as "Complainant's Exhibits Nos. 135, 136 and 137, respectively, Buck Inspection Photograph, D., L. & W. Tracks, near Hoboken Terminal. C. W. Higginson, Special Examiner, 5/25/10."

By Defendant's Counsel: Objected to as irrelevant, immaterial and not proper rebuttal. Statements upon the backs of the photographs and by the witness as to time of installation objected to as hearsay and not within the knowledge of the witness, and also as irrelevant, and immaterial and not proper rebuttal.

Q. 14. Please state whether or not the photographs just offered in evidence as "Exhibits Nos. 134, 135, 136 and 137" truthfully represent the condition of the D., L. & W. Tracks at the places where they were taken.

A. They show a fair average of the tie-plate condition on the D., L. & W. Tracks at the Terminal.

Q. 15. I notice on "Exhibit No. 136," photograph B, on the upper left-hand portion of the picture that the tie-plates seem to be placed under rail joints; is that a fact?

A. It is customary where I receive an order for tie-plates to ascertain from the Road purchasing, whether or not they want to use joint plates. These plates are usually punched different from the intermediate plates. This photograph shows plates used under the joint or angle bar.

Q. 16. Is this practice of using tie-plates under rail joints as well as on the intermediate cars, confined to the D., L. & W. Road?

A. Almost every Road that uses tie-plates, unless an im-
953 proved or patented joint is used purchase and use tie-plates under joints as well as the intermediate plates.

Q. 17. Please state as nearly as you can, about how many tie-plates of the Wolhaupter tie-plates you have sold to the New York Central and Hudson River Road, which is the first road mentioned in your answer to Q. 6.

A. During what period?

Q. 18. During the period that you have been employed by the Railroad Supply Co.

A. I have no record with me showing sales to this Road during my connection with the Railroad Supply Co., but sales during the past three years will amount to something over three million plates.

Q. 19. And state, approximately, how many you have sold to the Boston & Albany Railroad.

A. The Boston & Albany Railroad purchase in the neighborhood of 250 or 300,000 plates per year, and during the past three years have bought close to 750,000 plates.

Q. 20. And how many have you sold, approximately, to the Rutland Railroad and the other Railroads mentioned in your answer to Q. 6?

A. Rutland Railroad, 500,000 in three years.

New York, New Haven & Hartford used about 500,000 Wolhaupter plates last year, and in smaller quantities the years previous to that.

The Lehigh Valley have purchased small quantities of Wolhaupter plates during the last two or three years which will probably amount to a couple of hundred thousand plates.

The Pittsburg, Shawmut & Northern. This Road has used Wolhaupter plates for a great many years; the last sale being made to them during this past year, amounting to about 100,000 plates.

954 Southern Railroad has purchased as high as 750,000 plates in one year, and as low as 100,000 or 200,000 plates per year, to my personal knowledge for the last 6 or 7 years.

Norfolk & Western purchased from 250 to 800,000 plates per year.

Have for several years sold the Seaboard Air Line small quantities of plates.

Carolina, Clinchfield & Ohio about 750,000 plates since the Road was started four or five years ago.

Long Island Railroad in small quantities. Do not recall the quantity per year.

American Smelters Securities Co. They purchase in small quantities for their mining railroads in the West.

Direct examination closed.

Motion to strike out each and every question and answer as irrelevant, immaterial, incompetent, not rebuttal and as based simply upon the general recollection of the witness without production of records as hearsay and secondary evidence. Also to exclude the exhibits and statements thereon on the same ground.

Cross-examination by Mr. Reed:

X Q. 1. Have you complete records showing the dates, quantities sold and Railroads to which sold?

A. I have records of all orders received at the New York office of tie-plates sold in my territory.

X Q. 2. Does that series of records cover the sales to the different Roads about which you have been testifying?

A. Yes, sir, it does.

X Q. 3. Have you gone over those records and computed, or estimated or added up the different sales recently?

955 A. I have been able in a general way to keep in my mind the sales in large quantities made to the various Railroads with whom I have had business and sold tie-plates to.

X Q. 4. That you have kept in mind, simply as a general run of the business?

A. That is all.

X Q. 5. But you have not prepared or caused to be prepared a statement, or statements on your records showing the aggregate annual or total sales to any one of these Railroads?

A. I have not made any such records or totaled sales made to any particular Railroad or Railroads, excepting a memoranda as sales were made from year to year for my own information.

X Q. 6. And you have not examined these memoranda recently with a view of refreshing your recollection or memorizing, have you?

A. I have not gone over each sale so as to refresh my memory.

X Q. 7. So that your statements as to quantities and dates of tie-plates sold by you are based upon your general knowledge and recollection in a general business way?

A. They are based upon the quantities which these different Roads purchased from year to year.

X Q. 8. And that applies to all these different Railroads you have been testifying about?

A. It does.

X Q. 9. The tie-plates that you have sold during your connection with the Railroad Supply Company, under the name of Wolhaupter tie-plates and about which you have been testifying, have all been tie-plates with bottom flanges penetrating the tie parallel to the grain of the tie at right angles with the rail, and top corrugations or

956 grooves parallel to the grain of the tie and at right angles with the rail, are they not?

A. The plates I have reference to are the Wolhaupter Flange Tie-Plates with corrugations on top, most of them also having a shoulder.

X Q. 10. Are the top corrugations and bottom flanges in these Wolhaupter plates parallel with the grain of the tie and at right angles to the rail?

A. The corrugations in the top of the plate are in line with the flanges on the bottom of the tie-plates.

X Q. 11. Are both corrugations on the top and flanges on the bottom of these tie-plates parallel to the grain of the tie and approximately at right angles to the rail when they are placed in track?

A. Yes, sir.

X Q. 12. And some of them are without shoulders, but most of them have been with shoulders?

A. Since 1907, practically all sales of Wolhaupter plates which I have made have had a shoulder.

X Q. 13. Prior to 1907, what was the fact about the presence or absence of the shoulder?

A. Prior to that time, most of the sales were for 4¼-5 or 6-inch tie-plates without shoulder.

X Q. 14. And that's what you understand to be meant by the name "Wolhaupter Tie-Plate," a plate with corrugated or grooved top and flanged bottom with the flanges parallel to the top grooves and when set in track having the flanges in groove parallel to the grain of the tie and practically at right angles with the rail and either with or without a shoulder on the top; is that right?

A. The Wolhaupter plate as shown by the catalogs and samples, such as I have had to deal with, my experience with tie-plates have been of various designs. The flanges have been lengthened or shortened from time to time and a space between flanges
957 changed to meet the idea and wishes of Engineers. The grooves on the top of the plate have also been changed to meet various ideas of Engineers and conditions which we were obliged to meet with reference to punchings, etc.

X Q. 15. But the flanges and corrugations have been, when the plates were set in the track, parallel with the grain of the tie, have they not?

A. I do not recall of selling any tie-plates of what we term "Flange" plate unless they were arranged so that the flanges would embed themselves in the grain, parallel to it.

X Q. 16. These modifications in the Wolhaupter plate as to the depth of the flanges and alterations in the top corrugations were largely made at the suggestion of Railroad Engineers, I understand?

A. They were made at the suggestions of Railroad Engineers and other high officials on Railroads having charge of maintenance.

X Q. 17. Were the tie-plates which you sold and supplied to be placed at Rail Joints in any way different from the intermediate tie-plates, except in the punching?

A. The joint tie-plates were in almost every case the same type of tie-plate as the intermediate plate excepting that in some cases where a five-inch tie-plate was used for intermediates, a six-inch plate had to be used for joints on account of the wide stagger of the slotting of the angle-bar.

X Q. 18. Were these Wolhaupter shoulder tie-plates like those shown in "Exhibit No. 22," used at rail joints?

A. Some Roads use a 6″ Wolhaupter tie-plate with ½″ high shoulder and instead of having the rail rest against the shoulder of the tie-plate, the shoulder of the tie-plate is placed outside the leg of the angle-bar. Some plates I have sold are with a low
958 shoulder, so that it will go underneath the leg of the angle-bar, thus allowing the rail to rest against the shoulder.

X Q. 19. But there is no material modification of the shape and configuration of the Wolhaupter tie-plate that are used at rail joint?

A. I endeavor if possible to get the Road to use the same type of tie-plates for joints as intermediates.

X Q. 20. And you have usually been successful, I presume, in this effort?

A. Have been fairly successful with the modifications as I have just mentioned.

X Q. 21. When did you begin selling Wolhaupter tie-plates to the Baltimore & Ohio Railroad personally?

A. November, 1907, 115,000 plates.

NOTE.—Witness, after asking permission, refers to memorandum book.

X Q. 22. And when did you make your last sale to the Baltimore & Ohio Railroad?

A. December 15, 1908.

X Q. 23. And how many did you sell on that occasion?

A. One million and thirty thousand.

X Q. 24. During this period you sold to the Baltimore & Ohio Railroad, do you know or have you been informed whether that Road purchased or used tie-plates other than the Wolhaupter tie-plates?

Mr. Brown: Objected to as immaterial, also as improper cross-examination.

A. During that period we received other orders from this Road for tie-plates, they having sent out inquiries as they required plates, and sometimes we received orders after making quotations and at other times we quoted without receiving the orders.

X Q. 25. Do you know or are you advised whether the
959 Baltimore & Ohio Railroad, since your last sale to it has purchased other tie-plates than the Wolhaupter or tie-plates from some other source than the Railroad Supply Co.?

A. Some months ago we were asked to quote on a large quantity of plates, which we did, but were not successful in getting the business.

X Q. 26. Are you advised what tie-plates were purchased by the Baltimore & Ohio Railroad in that connection?

Mr. Brown: Last objection repeated.

A. I have not been informed by any one connected with this Road that the order had been placed or with whom.

X Q. 27. Well, have you had that information from any source?

Mr. Brown: Same objection.

A. I have heard, but can not state at this time who told me, but I think that Mr. Bentz of the Elyria Steel & Iron Co. told me he had secured the order.

X Q. 28. And what tie-plate is that that he is selling?

Mr. Brown: Same objection.

A. He did not inform me what type of tie-plate he had sold this Road.

X Q. 28. Well, do you know, or are you advised, what kind of a tie-plate it is that Mr. Bentz is selling for that Company to the Baltimore & Ohio Road?

Mr. Brown: Same objection.

A. As my notation was based on a flanged tie-plate, I would judge that this was the type of plate that had been sold the Baltimore & Ohio Railroad; but I have no way of knowing that this is a fact.

X Q. 29. Were there any other kinds of tie-plates that you saw in the D., L. & W. Terminal at Hoboken, besides Wolhaupter tie-plates?

960 A. I do not recall having seen any other plates at this point, excepting Wolhaupter plates.

X Q. 30. You did not examine, however, all of the tracks for their entire length at the Terminal, did you?

A. I did not, but I have been over a great many of the tracks at this point, having had other business in connection with the Terminal since it was being built.

X Q. 31. When was your last sale of tie-plates to the Delaware, Lackawanna & Western Railroad Co.?

NOTE.—Witness, by permission, refers to his note book.

A. Haven't got the date on, it's within the past 30 days.

X Q. 32. And for what style and in what quantity was that sale?

A. It was for 290,000 plates; 250,000 being intermediate plates and 40,000 joint plates. The plate being 7″ wide, with no flanges on the bottom, but with corrugations on top of the plate and with shoulder; the shoulder designed for a screw spike. These plates are to be used on creosoted ties and are for experimental purposes for them to determine whether a flange plate or a flat bottom plate is more desirable for creosoted ties.

X Q. 33. And in which direction do the top corrugations run, parallel to the rail or at right angle?

A. The top corrugations are at right angles to the base of the rail.

X Q. 34. And was that form of plate submitted as to its design by the D., L. & W. Engineers or Officials?

A. The working out of this design of plate was in the hands of Mr. Ray, Chief Engineer, and Mr. Neafie and myself.

X Q. 35. Were not drawings or sketches showing substantially this construction submitted to you by Mr. Neafie or some other Official of the Road originally?

961 A. The first blue-print which they submitted showed a flat bottom plate with flat upper surface and with a two-portion shoulder.

X Q. 36. And who suggested the abandonment of one shoulder and the top corrugations?

A. I do not recall that any one suggested the abandonment of the shoulder.

X Q. 37. Does the plate for which the contract made still retain a double shoulder portion?

A. The plate which we are going to furnish, if possible, has a

shoulder on similar to the 6″ ½″ high Wolhaupter tie-plate, as shown in the green catalog, page 5, "Exhibit No. 22." The portions of the shoulder near the edges of the plate is of special design to meet the screw spike conditions.

X Q. 38. Then by the expression "Double shoulder portion," you refer to the construction of the shoulder ends and did not mean a shoulder on each end of tie-plate?

A. The tie-plate has a shoulder only on the outside end of the plate; no shoulder on the inside end of plate.

X Q. 39. Then who suggested the grooves or corrugations in the top?

A. I am unable to state whether it was at my suggestion or at the suggestion of Mr. Neafie that this was done, as the negotiations and designing of this plate took the best part of two months before the order was finally placed.

X Q. 40. But the only substantial modification in the shape or configuration of the plate from the first blue-print was the placing of the corrugations or the grooves on the top? I mean the general contours.

A. The design as finally approved was similar to the original print which these people submitted to us, excepting that the corrugations were put on the top of the plate and the shoulder was designed so as to go practically from one side of the plate to the other.

962 X Q. 41. When was your last sale of tie-plate to the Boston & Albany Railroad?

A. Contract for tie-plates to the Boston & Albany Railroad comes under the head of New York Central contract, which was made along about the first of this year, and we have been getting in orders as they require plates.

X Q. 42. And what was the amount of that contract?

A. Contract was for their requirements for the year.

X Q. 43. When was your first sale to the Rutland Railroad?

NOTE.—Witness refers to note book by permission.

A. May 8, 1908, approximately 125,000 plates, although the Railroad has been buying Wolhaupter plates for a number of years before that.

X Q. 44. How extensive a system is the Pittsburg, Shawmut & Northern?

A. I don't know what their mileage is.

X Q. 45. Well, do you know where it begins and where it ends?

A. It starts at Hornell, N. Y., and goes down in the coal fields of Pennsylvania, towards Pittsburg.

X Q. 46. The Carolina, Clinchfield and Ohio Road is a new and comparatively short Road, is it not?

A. It is a new Road, built from the coal fields of Virginia and West Virginia and connects with the Freeboard Air Line at Bostick, N. C.

X Q. 47. About 150 to 200 miles in length.

A. I think they have about 300 miles.

X Q. 48. The American Smelter Securities Co. operates small mining Railroads in the West?

A. Yes.

X Q. 49. Do you know, or have you heard, of the other kinds of tie-plates than the Wolhaupter which were used by the Lehigh Valley Railroad? If so, state them.

963 A. The Lehigh Valley Railroad, up to two or three years ago were partial to the Goldie plate.

X Q. 50. And that was installed principally on their system?

A. That is what they used.

X Q. 51. What year was it that you sold the Southern Railroad as high as 750,000 plates?

NOTE.—Refers to memorandum book by permission.

A. I have not got it in my memorandum book, but 1904 or '5, I have forgotten which.

X Q. 52. And since then you have sold them at the rate of 100 or 200,000 a year?

A. They have purchased in quantities from 200,000 to 500,000 per year.

X Q. 53. When was your last sale to the Southern?

A. Made contract with them several months ago for their 1910 requirements.

X Q. 54. What other kind of tie-plate other than the Wolhaupter has the Southern used, do you know?

A. I do not know.

X Q. 55. Do you know whether it has used any other kind than the Wolhaupter?

A. I do not.

Cross-examination closed.

Examination closed.

HIRAM M. BUCK.

Recess.

964 And thereupon JOHN W. EBER, a witness produced on behalf of the complainant, having been first duly cautioned and sworn upon oath, testified as follows in answer to questions by Mr. Brown:

Same stipulations as to objections as before.

Q. 1. Please state your name, age, residence and occupation.

A. John W. Eber; age 38; Utica; Superintendent of the New York Central.

Q. 2. How long have you been connected with this Railroad?

A. Twenty years.

Q. 3. What territory is comprised in your jurisdiction at the present time?

A. Adirondack Division, Herkimer to Montreal.

Q. 4. State whether or not you have heretofore been connected

with the Division of the Road comprising the New York City end of it, or what is now known as the "Electric Zone."

A. Not after it was made the Electric Zone.

Q. 5. And state whether or not you have heretofore been connected with the Engineering Department of this Road.

A. Yes.

Q. 6. Are you familiar with the conditions of the track outside of your present Adirondack Division, so far as it relates at least to appliances used to hold the rail on the tie?

A. Yes.

Q. 7. State whether or not the New York Central System uses tie-plates in track and generally to what extent?

A. Yes, very extensively.

Q. 8. And what type or style of tie-plate is so used?

965 A. Wolhaupter.

Q. 9. What was the first Wolhaupter tie-plate used on this Road with which you became familiar and where was it so used?

A. The Wolhaupter tie-plate without shoulder on the West Shore Railroad.

Q. 10. And is the West Shore Railroad part of the New York Central System?

A. Yes.

Q. 11. State whether or not the Wolhaupter tie-plate with shoulder has been used on the New York Central System.

A. Yes.

Q. 12. Which was the lighter of the two plates, the Wolhaupter shoulder plate, or the Wolhaupter plate without shoulder?

A. Without shoulder.

Q. 13. State whether or not the grooves in the top surface of the Wolhaupter plates when positioned in track ran parallel to the tie and across the direction of the length of the rail.

A. Parallel with the tie and across the direction of the rail.

Q. 14. What was the weight of the rail under which the earlier and lighter Wolhaupter plates were used?

A. In my experience, 67 pounds.

Q. 15. State whether or not the weight of the rail has been increased since the installation of these first Wolhaupter plates.

A. Yes.

Q. 16. What is the fact with regard to the practice of the New York Central System, say in the last 10 years, in increasing its weight of rail and strengthening road bed and track appliances?

A. As the wheel loads increased, the strength of appli-

966 ances and road bed increased proportionately to sustain the increased loads.

Q. 17. And what is the fact with regard to the use of Wolhaupter tie-plates on joint ties and on intermediate ties?

A. On curves and heavily worked track, both intermediates and joint and side-joint plates are used. At other points, it is the general practice to use the joint and side-joint plates. On soft wood ties, the general practice is to use the tie-plates throughout.

Q. 18. And what is the reason for using tie-plates on ties underneath joints?

A. To prevent cutting of the ties by the wave motion of the rail.

Q. 19. And this, I presume, is because the joint is bolted to the rail and partakes of whatever motion the rail has?

Objected to as leading.

A. Yes.

Q. 20. Referring now to your own Division, the Adirondack Division, what is the fact with regard to curves and grades, are they heavy, or light, or ordinary?

A. Grades are heavier and curves sharper than average lines in this territory.

Q. 21. And what is the fact in regard to the efficiency of the Wolhaupter plates in track on curves and grades of this Adirondack Division?

A. Very efficient and satisfactory.

Q. 22. And what is the fact in regard to the Wolhaupter plates in use on this Division holding the track to gauge?

A. Very efficient.

Q. 23. Please look at the illustration on page 5 of "Com-
967 plainant's Exhibit No. 22" (Complainant's green covered catalog), and state if you recognize the tie-plates there shown.

A. Yes.

Q. 24. How does that tie-plate compare with the tie-plates in use upon your Division and elsewhere on the New York Central System?

A. Same type.

Q. 25. Are you interested directly or indirectly in the outcome of this litigation?

A. I am not.

Q. 26. And you appeared here to testify in response to a subpœna, did you?

A. I did.

Direct examination closed.

Motion repeated as of close of testimony of Mr. H. M. Buck.

Cross-examination by Mr. Reed:

X Q. 1. The Road referred to by you as the West Shore Road is the New York, West Shore and Buffalo?

A. It was originally the New York, West Shore and Buffalo.

X Q. 2. And it runs from Buffalo to near Jersey City?

A. To Weehawken.

X Q. 3. When were you connected with that Road and in what capacity?

A. 1890 to 1896 in the Engineering Corps, and 1896 to 1902, as Assistant Road Master, Road Master, Supervisor of Tracks.

X Q. 4. And during that period what different kinds of tie-plates were used on that Road?

A. I can only answer as to that portion on which I was Supervisor of Tracks at that time. That is, from 1899 to 1902. On my territory, the tie-plates principally used were of the Wolhaupter type.

968 X Q. 5. Were these with or without, shoulders?

A. Without shoulder.

X Q. 6. And what was your territory, please?

A. Syracuse to Revena, 150 miles, double track.

X Q. 7. Could you name any other kinds that were used in that territory during that period? Or, that you found in use?

A. I do not recall any other type.

X Q. 8. You have no knowledge of the kinds of tie-plates that were used on that Road in that period in other territory than your own, I understand?

A. As far as I can say, the other Divisions on the Road were supplied with the same type.

X Q. 9. Since 1902, have you known anything as to the kinds of tie-plates that were used at any point on the West Shore Road?

A. Yes.

X Q. 10. What kinds of tie-plates have been used since 1902 on West Shore Road?

A. Various kinds experimentally.

X Q. 11. Please tell what kinds, if you can.

A. Wolhaupter, McKee—that's all I recall.

X Q. 12. Do you know what the standard tie-plate at present on the West Shore Road is?

A. Wolhaupter shoulder.

X Q. 13. Do you know when the last purchase of tie-plates for the West Shore Road was made?

A. That's out of my jurisdiction.

X Q. 14. So I take it you don't know.

A. No.

X Q. 15. Do you know of any purchases of tie-plates for the West Shore Road, since you severed your connection with it in 1902?

A. Yes.

X Q. 16. When was the last purchase that you know of?

969 A. 1908.

X Q. 17. What is the weight of rail used on the West Shore Road?

A. 80 and 100 pound.

X Q. 18. Is the West Shore Road considered a high-grade Road in its track and equipment?

A. Yes, for the class of traffic handled.

X Q. 19. This traffic is principally freight, is it not?

A. Yes, west of Revena.

X Q. 20. But the West Shore Road is not considered as high a grade of railroad in its track and equipment as the Pennsylvania and New York Central, is it?

A. Can say nothing as compared with Pennsylvania; as compared with the New York Central main line, it is not as high grade.

X Q. 21. Are there any through, fast passenger trains operated over it? I mean trains that make the speed of 23 to 26 hours in a New York and Chicago schedule.

A. You will have to limit your territory, as I am not familiar enough with the time to say.

X Q. 22. What is the length of the Adirondack Division of the New York Central?

A. About 250 miles single track.

X Q. 23. Is the Wolhaupter tie-plate the only tie-plate used on this Division?

A. At the present time, yes.

X Q. 24. What other kinds of tie-plates have been used on it?

A. The only one that I am familiar with is a malleable iron shoulder tie-plate. I do not recall manufacturer, but believe it to be Beaver Dam.

X Q. 25. Is this Division, the Adirondack, tie-plated completely or only in portions?

A. Principal portions.

970 X Q. 26. Is the Wolhaupter tie-plate used on the Adirondack Division one with a shoulder, or without?

A. Both types have been used, but at present all shoulder plates.

X Q. 27. Does the tie-plate at the rail joint perform any different function or act in any different way from the tie-plate on intermediate tie?

A. No.

X Q. 28. With what other portions of the New York Central System are you familiar with construction of track and tie-plates than the ones you have given?

A. All lines east of Buffalo, except the Rutland Railroad.

X Q. 29. What kind of tie-plates are used on the New York Central System, on these lines that you have last referred to?

A. All Wolhaupter, as far as I can recall.

X Q. 30. And how long has the Wolhaupter been used exclusively on the New York Central Lines?

A. Can not say definitely, but five years exclusively, except plates used experimentally with the exception of the Boston & Albany and New York & Ottawa on which I have no specific information as to the tie-plates. My knowledge of these two Lines is only general.

X Q. 31. Then it is your understanding that the main line of the New York Central, extending from Buffalo to New York for the past five years, has used no tie-plates except the Wolhaupter plates, omitting the experimental uses?

A. Yes.

X Q. 32. Do you know whether or not this New York Central Main Line is at the present time purchasing, or contracting for any kind of tie-plate, other than the Wolhaupter?

A. I can't say.

971 X Q. 33. Your information on the question of tie-plates and the kind used on the Main Line of the New York Central is derived from your inspection and observation of the track?

A. Yes, sir.

X Q. 34. Is it derived from any other source?

A. No.

X Q. 35. You have not had any connection with the purchasing department of the New York Central Lines, have you?

A. Only in an official capacity.

X Q. 36. Please tell us what your official position is.

A. Superintendent, Adirondack Division.

X Q. 37. When you were connected with the Engineering Department of the Road, briefly, what were your duties?

A. When in the Engineering Corps, my duties were that of rodman, transit man, draftsman; from 1890 to 1896. Assistant Road Master, 1896 to 1899, in direct charge of track work, Frankfort to Revena, 90 miles double track West Shore. 1899 to 1902, Road Master and Supervisor of Track in direct charge of track work, Syracuse to Revena, West Shore, 150 miles double track. 1902 to 1904, Supervisor of Track New York Central at West Albany in charge of all yards and tracks, West Albany to Schenectady, Schenectady to Troy, Troy to Albany. The year 1904, Division Engineer, Rome, Watertown & Ogdensburg Division of the New York Central, about 500 miles single track. 1904 to 1909, Engineer of Track, New York Central Lines east of Buffalo, except Rutland, Boston & Albany and New York & Ottawa. 1910, Assistant Superintendent New York Central Stock Yards, East Buffalo. From March 1, 1910, Superintendent of Adirondack Division New York Central in charge of maintenance and operation.

972 X Q. 38. And I understand that the only tie-plates installed on the Adirondack Division at the present time are the Wolhaupter plates?

A. No. My previous answer to this question includes other plates.

X Q. 39. What other kinds of tie-plates are actually installed on the Adirondack Division than the Wolhaupter?

A. There are still some Beaver Dam malleable plates in track.

X Q. 40. And do you know when they were installed?

A. I can not recall.

X Q. 41. Well, do you know whether they have been in for some time, or are a comparatively recent installation?

A. My recollection is about 9 years, possibly less.

X Q. 42. And could you give us any idea as to the extent of their installation, or the number of the Beaver Dam malleable plates?

A. Have no definite recollection as to the quantity.

X Q. 43. Well, could you give us any idea at all as to the extent, whether they aggregate a mile, a half-mile or more?

A. More.

X Q. 44. Well, what would you say as to ten miles. Just give us your best idea on the subject?

A. I can't give you a definite answer of any kind.

X Q. 45. Well, the installation of these Beaver Dam plates was greater than for merely experimental purposes, was it not?

A. I know that it was for experimental purposes, as I recall watching final record of test.

X Q. 46. Well, was the record satisfactory, or unsatisfactory.?

A. Not satisfactory.

973 X Q. 47. In what respect was it unsatisfactory?

A. Principally because of the breaking of the plate under traffic, and also somewhat as to surface wear and general design of the plates.

X Q. 48. The plate was a flat bottom, shoulder top plate?

A. It was a flanged, flat top shoulder plate.

X Q. 49. And the flanges were across the rail or parallel with it?

A. Across the rail.

X Q. 50. So that the flanges entered the grain of the tie parallel to it, like the Wolhaupter flanges?

A. Yes.

X Q. 51. Do you know anything of recent investigations or experiments or arrangement for experiments on the New York Central System, with or for screw spike tie-plates?

A. No.

Cross-examination closed.

Examination closed.

JOHN W. EBER.

974 In the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,

vs.

THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

I, Charles W. Higginson, Deputy Clerk and Standing Examiner of the Circuit Court of the United States for the Northern District of New York, acting by consent of the parties in the above entitled cause do hereby certify that on the 25th day of May, 1910, at my office in the Post Office building in the City of Utica, New York, I was attended by Taylor E. Brown, Esq., solicitor for complainant and by J. Negley Cooke, Esq., and Frank F. Reed, Esq., solicitors for defendants and by the witnesses Hiram M. Buck and John W. Eber and the said witnesses who were of sound mind and lawful age having been by me carefully examined, cautioned and sworn to testify the truth, the whole truth and nothing but the truth in the within entitled cause gave their testimony which by counsel for the respective parties was taken down by a skillful typewriter in the presence of the said witnesses and from their statements and the said testimony was thereafter read over, corrected and signed by said witnesses respectively.

I further certify that I am not of counsel for either of said parties nor am I related to any of them either by blood or marriage and I am in no wise interested in the event of said cause.

Witness my hand this 31st day of May, 1910.

C. W. HIGGINSON,

Deputy Clerk and Standing Examiner of the Circuit Court of the United States, Northern District of New York.

975 In the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

Met pursuant to agreement, before me, Charles K. Darling, notary public, at my office in the Equity Court Room of the United States Circuit Court for the District of Massachusetts, in the Post Office building, Boston, Mass., at 3:30 p. m., this 26th day of May, 1910, to take depositions in rebuttal on behalf of the complainant in the above entitled cause, to be used at the final hearing thereof.

Present:

Taylor E. Brown, Esq., Counsel for Complainant.
F. F. Reed, Esq., and J. Negley Cooke, Esq., Counsel for Defendants.

And thereupon, F. B. FREEMAN, a witness produced on behalf of the complainant, having been first duly cautioned and sworn, upon oath testified as follows, in answer to interrogatories by Mr. Brown:

Q. 1. Please state your name, age, residence and occupation.

976 A. Francis Breakey Freeman; 43; Boston, Mass.; Chief Engineer of the Boston & Albany Railroad.

Stipulation.

The same stipulation as spread upon the record during the taking of the deposition of the witness Hiram M. Buck, is here entered into by and between counsel.

Q. 2. How long have you been an engineer by profession?
A. Between 20 and 25 years.
Q. 3. And how long have you been engaged in or connected with railroading?
A. All of that time.
Q. 4. What territory is covered by the Boston & Albany Railroad?
A. Main line from Boston to Albany; the Hudson branch, the North Adams branch; the Athol branch; the Ware River branch; and several minor branches.
Q. 5. Is the main line single or double track?
A. It is double track all through.
Q. 6. And about how many miles of trackage is comprised in the Boston & Albany Road?
A. You mean single track? There is about 1,000 miles of single track.

Q. 7. State whether or not the Boston & Albany Road uses tie-plates, and if so, of what pattern or design?

A. They do; in the past they have used the Servis and other plates; lately, they have used altogether the Wolhaupter plates.

Q. 8. Please look at the book marked "Complainant's Exhibit No. 22, Complainant's Green Covered Catalogue," and page 5 thereof, and state whether or not you can identify the illustration on that page, and if so, state what it is?

977 A. That is the Wolhaupter tie-plate, generally as we use it at present.

Q. 9. Please state your opinion as to the Wolhaupter tie-plate used on the Boston & Albany Road, holding the track to gauge and its general efficiency.

(Objected to as the witness has shown no qualifications in addition to the stipulation objections.)

A. In my opinion, both as to service and keeping the track to gauge, it is one of the best plates on the market, if not the best.

Q. 10. Have you any interest, direct or indirect, in either of the parties to this litigation, or in the litigation itself?

A. No, sir.

Q. 11. And did you come here to this place of examination in response to a subpœna?

A. Yes, sir.

Direct examination closed.

Motion to strike out testimony for reasons stated in the objections preserved by stipulation.

Cross-examination by Mr. Reed:

X Q. 12. Is the Boston & Albany Road a part of the New York Central system or lines?

A. Yes, sir; they operate it under lease.

X Q. 13. Who fixes or determines the style or kind of devices employed in the tracks of the Boston & Albany Road, the officials of the New York Central Lines, or the officials of the Boston & Albany Road itself?

A. The plans for the materials to be used are approved by the officials of both roads. The details for track material are worked out by the Engineering Department, and they make requisitions for what they require.

978 X Q. 14. Do you mean the Engineering Department of the Boston & Albany Road or of both roads?

A. I would answer that by saying that the material on both the roads is not alike in all particulars. Where the material is alike, the plans for both roads are the same; where the local conditions make it necessary, the plans for the Boston & Albany are not similar to the New York Central.

X Q. 15. Well does the New York Central body of officials or the Boston & Albany body of officials determine the kind or style of

tie-plates that are employed on the Boston & Albany? Please explan how this is done.

A. The plans which are used by the New York Central have been sent to the Boston & Albany, with the request that they be investigated and, if suitable for their purpose, used.

X Q. 16. When was it that the Boston & Albany used the Servis tie-plate?

A. I cannot give you a definite date, but it was prior to the time that the Wolhaupter plates came on the market.

X Q. 17. Were the first Wolhaupter tie-plates employed on the Boston & Albany with or without a shoulder?

A. It was without a shoulder.

X Q. 18. Could you tell about when it was that the use of the Wolhaupter tie-plate with a shoulder began on the Boston & Albany?

A. I think possibly two, it may be three, years ago.

X Q. 19. Which do you regard as preferable of the two styles of Wolhaupter tie-plates, the one with or without a shoulder?

A. For the present weight of equipment which we have to handle that with the shoulder is preferable.

979 X Q. 20. Is there any kind of tie-plate except the Wolhaupter type now installed on the Boston & Albany lines?

A. I can't answer that offhand; there may be some of the old forms of plates still in service.

X Q. 21. Well, excluding those plates which were installed before the use of the Wolhaupter plate of any style began, had any tie-plates except the Wolhaupter plates been installed on the Boston & Albany?

A. I couldn't answer that definitely without looking up the records. I think it is possible that some Servis tie-plates may have been installed since the Wolhaupter plate came on the market.

X Q. 22. Could you recall the date when the use of the Wolhaupter plate began on your road?

A. I think that it was around '98 or '99; I wouldn't state definitely, though.

X Q. 23. Is it not a fact, that since the use of the Wolhaupter tie-plates began on the Boston & Albany Road, tie-plates of the style known as McKee tie-plates, Style A, have been purchased and installed?

A. Yes, sir, that's possible they may have had some.

X Q. 24. Is it not a fact that in 1907, between two and three hundred thousand McKee tie-plates, Style A, were purchased, and either during that year or subsequently installed upon the Boston & Albany lines?

A. I am not aware of it; it is possible there were.

X Q. 25. I take it that you personally and your department are not connected with the contracting for and purchase of tie-plates?

A. Not directly.

X Q. 26. How long have you been in your present position?

A. Since last October.

980 X Q. 27. And prior to that date what was your position with the Boston & Albany, and for how long?

A. Prior to that date I was not with the Boston & Albany.

X Q. 28. Then your acquaintance with the Boston & Albany Road, its track conditions and devices, began in October, 1909?

A. Yes, sir.

X Q. 29. I believe all of the Wolhaupter plates, both with and without shoulders, have lower flanges penetrating the tie parallel to the grain of its wood and crosswise of the rail and corrugations or grooves upon the upper surface in the same direction as the flanges on the bottom, do they not?

A. Yes, sir.

X Q. 30. And it is a tie-plate of this description,—that is, a tie-plate with lower flanges penetrating the tie parallel to its grain, upper corrugations, or rather, top corrugations parallel to the flanges, and with or without a shoulder—that is known as the Wolhaupter or Wolhaupter type of plate?

A. Yes, sir.

X Q. 31. In the Boston & Albany construction are tie-plates placed underneath the rail joints as well as intermediate ties?

A. In some cases, yes.

X Q. 32. And is the Boston & Albany track tie-plated throughout or only in sections?

A. There are some short sections that I think are not tie-plated; that's on the main line; the branch lines are not so fully tie-plated.

X Q. 33. Do you know whether or not there are any McKee tie-plates Style A, or any McKee tie-plates at present installed on the Boston & Albany track?

981 A. Yes, sir, I think we have some McKee plates; I couldn't state just the style, but there are some.

X Q. 34. With what other tie-plates than the Wolhaupter and Servis have you had experience?

A. With the McKees; that's the only other.

X Q. 35. Then practically your experience has been with the Servis, the Wolhaupter and the McKee tie-plates, and none other?

A. Yes, sir.

X Q. 36. What experience with tie-plates did you have prior to entering into the employ of the Boston & Albany Road in October last?

A. I was with the New York Central for ten years. While I had not anything to do actually with the track I made up pretty nearly all the plans for the track material, which are now the standard on that road.

X Q. 37. Did you, while with the New York Central devise any plans for tie-plates?

A. Yes, sir, many times.

X Q. 38. And what was the style of type of the tie-plates that you devised while with the New York Central?

A. Well, as I recollect it now, I think there was probably McKee and Servis and Wolhaupter.

X Q. 39. And in saying that you devised the plan for these various plates, you mean that in each instance you followed the con-

figuration or style of plate, and simply drew your plans for the dimensions, thickness and punching for the various styles?

A. Yes, sir.

Cross-examination closed.

Examination closed.

982 NOTE (by the Witness)—In reading over the printed copy of my testimony, I notice the following: That in Question 37, the word "devise" I understood to be "revise;" similarly in question 38 and 39.

F. BREAKEY FREEMAN.

This ended the proceedings before me at this date.

[SEAL.] CHARLES K. DARLING,
Notary Public.

UNITED STATES OF AMERICA,
State of Massachusetts, County of Suffolk, ss:

I, Charles K. Darling, a notary public in and for the Commonwealth of Massachusetts, duly commissioned and qualified, and authorized to administer oaths, and to take and certify depositions, do hereby certify that in the cause pending in the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois, wherein The Railroad Supply Company is complainant and The Hart Steel Company and Guilford S. Wood are defendants, I was attended at my office in the Equity Court Room of the United States Circuit Court for the District of Massachusetts, in the Post Office building, Boston, Mass., on the twenty-sixth day of May, A. D. 1910, by counsel for the respective parties, and by Francis Breakey Freeman, the witness named in the foregoing deposition; that said witness, being of sound mind and lawful age, was by me first duly cautioned and sworn to testify the truth, the whole truth and nothing but the truth in said cause, and was then carefully examined; and the said witness did thereupon depose as appears in the foregoing deposition.

I further certify that the reason for the taking of said deposition was, and is, and the fact was, and is, that the said dependent now lives in Boston, State of Massachusetts, more than one hundred miles from the place of trial where the said cause is appointed by law to be tried; that I am neither of counsel nor attorney to either of the parties in said suit nor interested in the event of said
983 cause, and that it being impracticable for me to deliver said deposition with my own hand into the court for which it was taken, I have retained the same for the purpose of being sealed up and directed with my own hand, and speedily and safely transmitted to the said court for which it was taken, and to remain under my seal until there opened.

Witness my hand and seal as such notary public at Boston, in said district, this twenty-seventh day of May, A. D. 1910.

[SEAL.] CHARLES K. DARLING,
Notary Public.

Examiner's Fees:

12 fols. at $.20	$2.40
1 copy—12 fols. at $.10	1.20
Attendance, May 26, 1910	3.00
Oath to witness	.10
Postage	.05
Total	$6.80

Paid by complainant.

984 In the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois.

No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

CHICAGO, ILLINOIS, June 13, 1910.

Met pursuant to adjournment.
Present: Col. Taylor E. Brown, for Complainant.

In accordance with the agreement between counsel an adjournment was taken to Friday, June 17, 1910, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, June 17, 1910.

Met pursuant to adjournment.
Present: Col. Taylor E. Brown for Complainant.

And thereupon an adjournment was taken to Monday, June 20, 1910, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

985 CHICAGO, ILLINOIS, June 20, 1910.

Met pursuant to adjournment.

Present:

Col. Taylor E. Brown on behalf of the complainant.
Frank F. Reed on behalf of the defendant.

And thereupon, CHARLES R. MILLER, a witness produced on behalf of the complainant having been first duly cautioned and sworn testifies upon oath, in answer to interrogatories propounded by complainant's counsel, Col. Brown, as follows, to-wit:

Q. 1. You may state your name, age, residence and occupation?
A. Charles R. Miller, Cleveland, Ohio; age 62; lawyer.

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Q. 2. You may state what education you have had in and experience you have had with mechanical subjects and what experience you have had in the comparison of letters-patent for invention with mechanisms of one kind or another and of comparison of one mechanism with another mechanism and any other matter or thing in your education or experience that would, in your opinion, tend to qualify you to testify as an expert witness in patent causes with regard to mechanical subjects and letters-patent for invention?

A. During all of my youth and early life my father, William K. Miller, was interested in and superintendent of a large manufacturing plant, including the Russel & Company plant at Massillon, Ohio,
where they manufacture threshing machines, portable and
986 stationary engines and saw mill plants. The C. Russel &
Company plant at Canton, Ohio, and the Peerless Reaper Company of the same place, both of which plants were manufacturing reapers, mowers, binders and harvesting machines. My father was the inventor and patentee of many of the things manufactured in these several plants and I spent most of my time when not in school assisting him in his experiments and in the preparation of working drawings for his various devices.

On being graduated from the Canton High School, I entered the Canton Academy and took a special course in machine designing and mechanical drafting. I then entered the office of Ex-President, William McKinley, and studied law with him being admitted to the bar on examination by the Supreme Court of Ohio on the 3rd day of December, 1879, and have since been admitted to practice in the United States District and Circuit Courts, Circuit Court of Appeals and the Supreme Court of the United States. I am a member of the Patent Bar Association of Chicago and of Washington, D. C.

Since my admission to the practice of law in 1879, I have made a specialtiy of the soliciting of patents, of the litigation of patents and corporation law. I presume since that time I have either directly prosecuted, or been of counsel in the prosecution of more than a thousand applications for letters-patent and as a necessity of my practice have been frequently called upon to compare drawings with mechanical structures and devices and with letters-patent and to express opinions in relation thereto. I have been either solicitor or of counsel in a large number of cases extending over a period of thirty years in the litigation of patents in the courts and have heretofore been called upon to testify as an expert in such cases.

My experience has caused me, as heretofore stated, to ex-
987 amine a large number of mechanisms covering a very wide
field and to compare them with drawings and letters-patent, the extent thereof ranging from watches to and including all kinds of agricultural implements, engines, stationary and traction, and railway devices.

During my practice of the law at Canton, Ohio, I was for a number of years local attorney for the Pennsylvania Company and later for the Baltimore & Ohio Railway, and had occasion to become familiar with the operation of railways and the mechanisms incident thereto. I was also counsel for three rolling mills, and had occasion to and

did become familiar with the organization of such plants and their mode of operation.

I have had occasion to and have studied the subject of tie-plates, have seen them rolled at the mill and in use upon the road and believe I fully understand their use, the purposes of said use, their mode of application and the functions they perform.

Q. 3. State whether or not you have examined the three letters-patent here in suit, namely, No. 538,809, issued May 7, 1895, Benjamin Wolhaupter, "Tie-Plates," No. 691,332, issued January 14, 1902, to Benjamin Wolhaupter, "Railway Tie-Plate" and No. 721,644, issued February 24, 1903, to Benjamin Wolhaupter, "Tie-Plate" and understand the invention described in each of said letters-patent and particularly that set forth in claim 8 of the first Wolhaupter patent mentioned, No. 538,809, claims 1, 2 and of the second Wolhaupter patent No. 691,332, and claims 7 and 9 of the third Wolhaupter patent mentioned, No. 721,644; also please state whether or not you have read all or any portion of the deposition of John Howard McElroy taken on behalf of the complainant during the taking of prima facie proofs and all or any portion of the deposition of defendant's expert witness, Henry W. Carter; and
988 whether or not you have examined the various physical and documentary exhibits referred to in the depositions of complainant's expert, McElroy, and defendant's expert, Carter?

A. I have examined the three patents referred to and the claims thereof at issue in this case and I believe I fully understand the same and the invention described and claimed therein. I have also read all the deposition of Mr. McElroy and of defendant's expert, Mr. Carter, and have examined the various exhibits referred to in their testimony, and I believe I fully understand them.

Q. 4. Without calling your attention specifically to any particular sentence or paragraph in the deposition of defendant's expert, Mr. Carter, I direct your attention to his general conclusion, namely, that he has found certain letters-patent of prior date to those of the Wolhaupter patents in suit to be an anticipation of the invention of Wolhaupter as set forth in the several claims in issue; that said claims are thus invalidated by the prior art; and that even if valid they are limited by the prior art to a specific construction which the defendant's tie plate in issue in this cause does not contain and therefore in the opinion of said Carter does infringe the claims of the patents in suit. From your examination of the deposition of Mr. Carter and of the said prior patent exhibits referred to, please state whether or not you agree or disagree with this general conclusion that he has expressed in his deposition?

Mr. Reed: Objected to as too vague and indefinite and as calling for a conclusion which is necessarily too vague and indefinite to constitute evidence.

A. I cannot and do not concur in the opinion expressed by Mr. Carter. On the contrary my examination of the same prior art patents and exhibits leads me to express the opinion that there
989 is nothing in said prior art to anticipate, qualify or limit the claims of the patents in suit.

Nor can I or do I concur in the conclusion of Mr. Carter that the defendant's tie-plates do not embody the structure called for by the claims in issue. It is my opinion that they do embody such structure and are infringements of said claims.

Mr. Reed: Those portions of the answer in which it is stated that the witness does not agree or concur in the opinion of Mr. Carter are objected to as too vague and indefinite to constitute evidence and those portions of the answer in which the witness states an opinion as to the scope and validity of the patents and their claims and the opinion on the question of infringement objected to as not rebuttal evidence and not responsive to the question.

Q. 5. Please again refer to the Wolhaupter patents in suit and state what you understand to be the invention disclosed and stated therein and claimed in the six claims in issue, to-wit, claim 8 of the first patent, claims 1, 2 and 3 of the second and claims 7 and 9 of the third Wolhaupter patent?

Mr. Reed: Objected to as not rebuttal testimony.

A. I shall take up the patents in the order in which they were granted.

Wolhaupter Patent No. 538,809.

This patent describes and claims two separate and distinct constructions. The second object of the invention as stated in the specification, page 1, lines 60 to 62, is as follows:

"The invention further contemplates a form of plate provided with top and under flanges which shall be extremely strong in its construction and effective in its designed use, and yet easily rolled or formed into shape as well as very light weight."

990 The first object recited in the specification is set forth on page 1 thereof, commencing with line 50 and is as follows:

"My invention has for its object the production of a plate which, while being provided with the top flange to receive the thrust of the rail is so constructed on its under side that after it has been moved by the lateral pressure of the rail it, together with the rail, can be easily moved back to the proper position to maintain the gage and be held in that position even more firmly than when originally laid."

The first object of the inventor, just recited, it is pointed out in the specification can be attained by stepping the projecting flanges on the bottom of the plate.

Both features and objects are separately described and are the subject of separate claims. I have reversed the order of their statement in the specification because the claim at issue in this patent, to-wit, claim 8, pertains to the second object of the invention and is as follows:

"8. A railway tie-plate formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie and on its upper side with a series of flanges on which the rail rests, substantially as described."

The organization of a tie-plate embodying the invention set forth n said claim 8, includes:

(*a*) a thin metal plate provided with spike-holes

(*b*) projecting devices on the bottom more or less sharpened

(*c*) projecting flanges on the top of the plate upon which the rail rests.

Actual experience has shown that the sawing motion of the rail, together with its lateral thrust, grinds out that portion of the tie directly under the seat of the rail, the same being deeper at its outer edge and that for the purpose of preserving the life of the
991 tie and preventing the spreading of the rails, and to enable the maintenance of the heavy equipment and high speed now prevalent in railroad operations it is necessary to have placed under the rail a light metal plate. It is also desirable that this plate should be as light as possible and at the same time prevent buckling for the reason that in view of the very large number of such plates required, the matter of weight becomes an important factor in relation to the question of cost.

It is also desirable that said plate should be provided with spike-holes for the reason that where spikes penetrate or pass through the plate, they perform the function of holding the plate securely to the tie, thus preventing its movement upon the tie and the plate performs the function of tying the spikes together so that any lateral movement of the rail is jointly resisted by the plate and all of the spikes.

The projecting devices on the bottom of the plate, more or less sharpened, perform the function of and provide additional means for attaching the plate to the tie, and being more or less sharpened they readily penetrate the tie by the weight of the traffic. They also perform the additional function of assisting and resisting lateral strain and in thus attaching the plate to the tie they also co-operate with the spikes which pass through the plate and provide additional means of resisting the lateral thrust of the rails on the spike, and serve to distribute this resistance, force or power to the entire surface of the plate.

The flanges on the top of the plate perform the dual function of furnishing bearing surfaces to the tie flange and what I would term a bite to resist the lateral thrust of the rail and they also at the same time prevent the grinding and wearing effect upon the plate produced by the sand and dust incident to the traffic. They also
992 prevent the action of rust upon the plate for the reason that any water is carried off from the plate by the grooves.

These projecting flanges, while they resist the crushing and lateral strain, have a tendency to keep the projecting devices on the bottom of the plate in direct contact with the tie and at the same time co-operatively enhance the resisting action of the plate and all the parts thereof against lateral strain.

In short I find claim 8 of the Wolhaupter patent No. 538,809, issued May 7, 1895, calls for and comprehends a tie-plate structure which embodies

(*a*) a thin metal plate provided with spike-holes

(*b*) projecting devices on the bottom more or less sharpened
(*c*) projecting flanges on the top of the plate upon which the rail rests.

Wolhaupter Patent No. 691,332.

This patent has for its object the location of the flanges on the top and bottom of the plate directly or substantially beneath each other.

The inventor recites on page 1 of the specification, lines 20 to 35:

"My invention has for its object the production of a tie-plate which, while incorporating this feature of flanges on the upper side for sustaining the rail, will have the flanges on the lower side so arranged and disposed that there is the least liability of the plate buckling.

"To this end, therefore, the invention primarily consists in the provision on the upper side of a tie-plate of one or more flanges or projections for sustaining the rail and on the under side flanges for entering the tie parallel with the grain thereof, the flanges on the lower side being located directly or substantially beneath those on the upper side."

993 And again on page 1 of the specification, lines 77 to 85, the inventor says:

"It will thus be seen by the above construction that I have provided a plate wherein the rail is sustained above the body of the plate by flanges on the upper side of the plate and that directly beneath these flanges are located the tie engaging flanges so that the weight will be sustained at the points where there is the greatest pressure on the plate."

It is apparent therefore from the inventor's statement of the object and purposes of his invention that the placing of the projecting flanges on the top and bottom of the plate in the same line brings them in line with the crushing pressure and that their resisting force is enhanced, due to the fact that the pressure is thus applied in line through the projecting flanges on the top of the plate and the projecting devices on the bottom of the plate and thus located in line they co-operatively afford additional resistance against lateral strain throughout the plate and all its parts.

The claims in issue covering the above recited features are as follows:

"1. A railway tie-plate provided on its upper side with one or more flanges on which the rail may rest or by which it is directly sustained and on the under side with one or more tie-engaging flanges extending parallel with the upper flanges and directly beneath the latter, substantially as described.

"2. A railway-tie plate provided on its upper side with one or more flanges on which the rail may rest and by which it is directly sustained and on the under side with one or more tie-engaging flanges extending parallel with the upper flanges and directly beneath the latter and sharpened to permit them to readily enter the tie, substantially as described.

"3. A railway-tie plate provided on its upper side with one or

more flanges on which the rail may rest and by which it is directly sustained, on the under-side with one or more sharpened tie-
994 engaging flanges extending parallel with the upper flanges and directly beneath the latter, and on the upper side with an additional flange or flanges extending above the plane of the rail-sustaining flanges and adopted to receive the lateral thrust of the rail, substantially as described."

The organization of a tie-plate embodying the first and second claims must necessarily include

(*a*) a thin metal plate provided with spike holes

(*b*) projecting devices on the bottom

(*c*) projecting flanges on the top of the plate on which the rail rests

(*d*) the projecting devices on the bottom parallel with and directly under the flanges on the top.

The organization of a tie-plate embodying claim 3 must necessarily include all of the above recited elements and the addition of the following:

(*e*) flanges above the plane of the rail supporting flanges to receive the lateral thrust of the rail.

Of this latter element "an additional flange or flanges extending above the plane of the rail-sustaining flanges and adapted to receive the lateral thrust of the rail" it may be observed that in the absence thereof, the lateral thrust of the rail must be resisted by the friction contact of the bottom of the rail on the plate and the neck of the spike, the tendency being in time to cut out the neck of the spike and thus permit of the lateral displacement of the rail. When, however, the plate is also provided with flanges above the plane of the rail-supporting flanges which abut against the rail flanges and thus resist the lateral strain the working or sawing of the throat of the spike is prevented and the lateral strain is resisted by the co-operative means of these flanges, the spikes, the plate and the projecting flanges, top and bottom, thus the whole plate with all its parts comes into action in resisting lateral strain.

Recess.

995 Wolhaupter Patent No. 721,644.

This patent has for its object as is recited in the specifications, the manufacture of a tie-plate with the least amount of metal consistent to durability and strength, with a view of cheapening the cost of manufacture and also the manufacture of a tie-plate of such configuration upon its surface that the water, sand or other deleterious material shall be drained off or away from the same.

To accomplish these purposes, just above recited, the patentee says that upon the upper surface of the plate there is provided a series of sand spaces, channels or grooves. He has shown these grooves running diagonally or at an incline across the face of the plate, as in Figure 3 and he has also shown them running directly transverse the surface of the plate, as in Figure 6. The plate itself is thus lightened to the extent of the metal removed to form the transverse

grooves, and the supporting upper surface of the plate presents its greatest strength to the rail flange where the greatest thrust is present, to-wit, on the outer edges and center of the bottom of the rail flange. By providing or arranging the grooves transverse the upper surface of the plate and extending from edge to edge thereof the draining of the tie-plate is more effectively accomplished because of the suction of the train in passing over the plate is transverse the plate and thus its force is utilized in clearing the plate of sand and dust and the grooves provide a means for the ready passage thereof from the plate. At the same time the flange of the rail completely covering these transverse grooves form a covering which prevents rain or brine from entering the grooves.

Both the features just above stated are comprehended by and claimed in the claims at issue which are as follows:

996 "7. A tie-plate provided in its rail-supporting surface with transverse grooves or channels, and at one margin of said supporting surface with a transverse rail-abutting shoulder.

"9. A tie-plate provided in its rail-supporting surface with transverse grooves or channels, reaching to the edge of the plate, and at one margin of said surface a transverse rail-abutting shoulder."

The only difference between the two claims is that in claim 7 the transverse grooves or channels are so called, while in claim 9 there is the additional provision that the transverse grooves or channels reach from edge to edge of the plate.

The organization of a tie-plate embodying said claims with the distinction or difference that I have already pointed out between the two claims, would include the following:

(*a*) a thin metal plate provided with spike holes

(*f*) a transverse flange extending above the plane of the rail supporting flange and across one margin of the plate.

(*g*) transverse grooves extending across the upper surface from edge to edge of the plate.

Mr. Reed: Said answer and each statement thereof is objected to as not proper rebuttal testimony.

Q. 6. Please again refer to each of the patents of the prior art set up in the defendant's answer and referred to in the deposition of the defendant's expert witness, Mr. Carter, and state what, if any bearing, any of said prior patents have by way of anticipation of the inventions set forth in the several claims in issue of the three Wolhaupter patents in suit, giving the reasons you have for the opinion you express. In giving this answer you may if you so desire refer to the deposition of the defendant's expert witness, Mr. Carter, and any other evidence offered by the defendant?

997 A. In answering your question it will be necessary for me to take up the patents in suit in the order of the date of their issue so as to properly distinguish the prior patented art applicable to each patent in suit.

Considering first the patented prior art applicable to the Wolhaupter patent No. 538,809, issued May 7, 1895, for which applica-

tion was filed March 13, 1895, I shall refer to each of the patents that may be of an earlier date separately.

Wootten Patent No. 66,437, July 2, 1867.

This patent shows a railroad chair which is not adapted to or intended to be used as a tie-plate or to perform any of the functions of a tie-plate. It could not be so used without a radical reconstruction and rearrangement of its parts and neither the drawings nor the specifications indicate that the inventor had any conception of such a use.

The coupling plate B is securely bolted to the flange of the rail thus making it for all intents and purposes a part of the rail moving with the rail and pounding the tie with the rail. Indeed the inventor recites in his specification that the coupling plate resting on the sleeper at each end "serves as a rigid girder to support the ends of the two rails." The coupling plate is provided with a depending rib *b* and the sleepers or ties are "so cut away as to admit the beveled edges of the ribs *b* and permit the flat or horizontal portions of the coupling to rest squarely on the said sleepers."

Thus it will be seen that the rib *b* is not intended to, nor is it capable of performing any of the functions of, nor is it suggestive of, projecting devices on the bottom more or less sharpened. There are therefore none of the elements of claim 8 of the Wolhaupter patent No. 538,809 found in this Wootten patent No. 66,437, dated June 2, 1867.

998 I am confirmed in this view of the Wootten patent by the admissions of defendant's expert Mr. Carter found in his answer to X Q. 65 as follows:

"I would not of course undertake to say that this Wootten device was adapted for general service as an ordinary tie-plate because its peculiarities make it special to the joining of rails as illustrated. And for this reason I have preferred not to expressly mention in my comparison between the prior art and the patents in suit."

Gregory Patent No. 93,875, Aug. 17, 1869.

This patent is also for a railway chair and does not disclose or suggest, nor is there anything in the drawings or specifications to indicate that the inventor had any conception of its use as a tie-plate, nor is there anything shown, described or claimed therein suggestive of any of the elements of the eighth claim of the Wolhaupter patent in suit, No. 538,809. I am confirmed in this view of the Gregory patent by the admission of defendant's expert, Mr. Carter found in his answer to X Q. 77, the question and answer being as follows:

"X Q. 77. Please look again at the 'Defendant's Exhibit Patent to Gregory, No. 93,875,' and state whether or not this patent, in your judgment, discloses or suggests the construction covered by the claims in suit in either of the three Wolhaupter patents in suit?

"A. No."

Roosevelt Patent No. 124,856, March 19, 1872.

This patent is for a spliced piece for railway rails and is a spring coupling adapted to provide for and take care of the expansion of the rails. There is also provided a circular spring C bolted or riveted on the under side of the rail flange and thereby joined thereto.

There is likewise nothing shown, described or claimed in this patent, nor is there anything which would indicate that the
999 inventor had any conception of its being used for a tie-plate.

There is certainly nothing in this patent even suggestive of the elements of claim 8, or any thereof, of the Wolhaupter patent in suit No. 538,809.

Again I am confirmed in my view of this patent by defendant's expert, Mr. Carter, in his admission in answer to X Q. 78, which question and answer are as follows:

"X Q. 78. What bearing, if any, upon either of the three patents in suit, has the Roosevelt patent, No. 124,856?

"A. I don't see that it has any."

Hudson Patent No. 142,020, August 19, 1873.

This patent is for a railway rail joint and is adapted for use with a rail having rolled thereon on the under side of the rail flange, a wide depending flange B, almost, if not quite one-fourth the width of the bottom of the rail flange. Upon each side of the rail at their joints are bolted the curved metallic plates C C. These plates fit snugly against the rail and serve to break the joint between them and bind them firmly together. The chair D and the curved metallic plates are securely bolted to each other and to the rails and become thereby a part of the rail, move with the rail, pound with the rail, and if they were located upon the end of a cross-tie would wear the cross-tie as the rail would wear it. Notwithstanding the statement of Mr. Carter, defendant's expert in answer to direct-question 15 that this Hudson patent has a groove in its upper or rail supporting surface and shoulders at each side of the surface to engage the edges of the rail-base and hold the rail against movement of the plate and also that the plate has a lower depending flange or rib substantially like that of the Wells patent, I am still of the opinion that there is nothing shown, described or claimed in this patent, nor is there any-
1000 thing which would indicate that the inventor had any conception of its being used for a tie-plate, nor is there anything even suggestive of any of the elements of claim 8 of the Wolhaupter patent in suit No. 538,809.

It is perfectly apparent upon an examination of the drawings of the Hudson patent that the chair D could not be used as a tie-plate, for the following reasons:

First. It is adapted to and is intended to be firmly and securely bolted to the rails, and therefore moves and pounds with the rail and does not act independent thereof to resist lateral strain.

Second. The wide depending flange extending across the base thereof fully one-quarter the width of the base of the chair would

require the sawing or champing out of the tie to such an extent as to have a tendency to weaken the tie.

Third. If one of the chairs should become broken another could not be substituted without removing the entire rail and all the chairs upon which the rail might be resting. This would be necessary to enable the introduction of the depending flange into the previously prepared depression in the tie.

And thereupon an adjournment was taken to Tuesday, June 21, 1910, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

1001 CHICAGO, ILLINOIS, June 21, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

And thereupon the witness, MAJOR MILLER, resumes his answer to Q. 6.

Wells Patent No. 203,570, May 14, 1878.

This patent is also for a railway chair extending over four ties. It shows a long metal bar having three independent bearings transverse the chair and on the outer edge thereof raised flanges D D which extend up flush with the upper surface of the flange of the rail. A central rib E is located directly beneath the center of the chair and serves, as is recited in the specification, "to add to the longitudinal rigidity of the chair." This lower central rib E is of such a size, more than one-fourth of the width of the base of the chair, that it would be necessary to manually cut out a sufficiently large portion of the tie to permit it to be inserted therein.

This device could not be used in the form shown for a tie-plate for the following reasons:

First. Its weight would be such as to preclude its use because of the expense.

Second. In equipping a new line it would be necessary to materially add to the cost thereof by the labor incident to the cutting of the ties to a sufficient depth to receive the rib E.

Third. The ties when so cut to receive the rib E would be materially weakened and the tie would be liable to break.

Fourth. It would be impossible to replace one of these devices without removing the entire rail because such a device could not be slipped in under the rail.

1002 Fifth. The same would be true in event it was desired to substitute this form of device for any other form of tie-plate which might be in use upon a road.

In short to summarize the original cost, the cost incident to installation and the cost incident to replacing would preclude its use.

Mr. Carter, defendant's expert, says on page 397 of his typewritten deposition:

"I should say that the Wells patent No. 203,570 of May 14, 1878,

and the Goldie patent No. 485,030 of Oct. 25, 1892, were the best references."

And again on page 297 of his typewritten deposition, in speaking of this Wells patent, he says:

"The same device if cut off to a shorter length like an ordinary tie-plate would respond in every respect to the claim of the Wolhaupter patent, and would in fact be the same device mechanically as before although it would then be a mere tie-plate and could only support the joint in case the rail was joined over the tie."

In other words, if the Wells device were reconstructed in the light of the Wolhaupter patent No. 538,809, in the opinion of Mr. Carter it might be a tie-plate but it may be observed at this point that it took the Wolhaupter patent No. 538,809 to make the suggestion to Mr. Carter.

Again quoting from the testimony of Mr. Carter, page 364 of the typewritten deposition, and as showing the impossibility of using this Wells device as a tie-plate without reconstruction, he says:

"If this rib was made of the proportion and particularly of the depth which the drawing indicates, it would probably require to cut into the tie especially if the tie were made of hard wood, especially oak. If, however, the rib was made no deeper than the under ribs of defendant's tie-plate which are only about a quarter of an inch in depth the weight of the train would force the tie-plate down to a firm seat upon the tie without requiring any cutting of the tie to receive the rib."

1003 Again in answer to cross-question 185 as to whether or not the aluminum model of the Wells device had been made in steel and reduced in length it would be practical to use the same as a tie-plate, he says:

"It would be practical in the sense of being possible practice. In the sense of being commercially practicable it undoubtedly would not be since the art furnishes so many devices which are obviously more satisfactory."

Mr. Faulkner, Manager of the Tie and Timber Department of the Atchison, Topeka & Santa Fe Railway System, on page 71 of his typewritten deposition, testifies as follows:

"R. X Q. 753. The shape of this rib E is such, is it not, that the chair could not be placed into the ties without the ties being cut for that purpose?

"A. Specially cut for that purpose.

"R. X Q. 754. Specially cut. The chair could not be placed under the track and the rib forced into the tie by the rolling weight that passes over the rail?

"A. No.

"R. X Q. 755. Nor could the rib be forced into the ties by any machine or apparatus with which you are acquainted?

"A. No.

"R. X Q. 756. What, in your opinion, would be the effect on the tie of cutting the tie substantially to half its thickness in order to produce this socket for the rib to rest in?

"A. Oh, the tie would break; it would be liable to break."

I am therefore, for the reasons above stated, of the opinion that nothing in the specification or drawings of the Wells patent No. 203,570 suggests that the inventor had any conception of the use of said railway chair as a tie-plate. Nor would it be possible to so use it without a radical reconstruction and rearrangement of its parts which would amount to a new device and for like reasons I am of the
1004 opinion that there is nothing in the specification and drawings of this patent which would at its date, May 14, 1878, suggest the construction shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Servis Patent No. 249,407, Nov. 8, 1881.

This is the first of the prior art patents which shows a wear or tie-plate. The disclosure of this patent is a flat piece of metal, either with or without perforations to receive the spikes, although the patentee says that the plate is designed to be made of such a width that it will pass between the spikes. Depending from the bottom of the plate there is a flange D which can be made either rectangular or with square ends.

I am therefore of the opinion that this Servis patent fails to show a structure which anticipates the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

I am confirmed in this opinion by the admission of Mr. Carter, defendant's expert, in answer to X Q. 79, the question and answer being as follows:

"X Q. 79. Please look at "Defendant's Exhibit, Servis patent No. 249,407." This patent shows a tie-plate that has a perfectly flat and unbroken upper surface on which the rail rests, does it not?

"A. Yes."

The same structure being shown and described in the Servis Reissued Patent No. 10,302, what has already been said of the original patent No. 249,407 is therefore applicable to the reissued patent and it need not be considered separately.

Gould Patent No. 280,030, June 26, 1883.

This patent is for a railroad rail cushion and joint, the primary object of which is to interpose a rubber plate or cushion be-
1005 tween the flange of the rail and the tie, and in Figure 2 there is shown a plate for holding the rubber cushion in position. There are no spike-holes in this plate, although there is shown on the under side of the plate an intercepted groove *c* and extending transversely of one edge of the plate, a flange *d*. There is not present on the upper face of the plate "a series of flanges on which the rail rests."

I am therefore of the opinion, for the reasons above stated that there is nothing in this Gould patent No. 280,030 that anticipates the structure shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Servis Patent No. 294,816, March 11, 1884.

This patent shows a wear-plate for railway ties. It consists of a thin sheet of metal with its opposite edges bent down forming depending flanges D of a size to extend more or less into the tie. There are no spike-holes and the spikes are therefore not tied together. The upper surface of the plate is entirely flat having no projections of any kind thereon.

I am therefore of the opinion for the reasons above stated that there is nothing shown in this Servis patent to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

I am confirmed in this opinion by the admission of Mr. Carter, defendant's expert, when he says in answer to X Q. 83:

"A. This Servis patent simply shows another form of flanged tie-plate applied to the tie between spikes, and not provided with any spike holes. I should not consider this patent as in itself, anticipating either of the patents in suit."

1006 Fisher Patent No. 313,067, March 3, 1885.

This patent shows another form of rail joint extending between two ties. It is intended to be and is securely bolted to the rail and becomes to that extent a part of the rail and would act upon the tie to the same wearing extent as the rail itself. There is shown, for a portion of its length only, projecting from the upper face of the plate or "sole-piece, bridge or chair" flanges *a*, but the rail does not abut against these flanges. There is shown on the bottom of the chair three wide, flat-bottom, projecting flanges which do not and are not adapted to penetrate the wood of the tie and in my opinion this "sole-piece, bridge or chair" could not be used separately as a tie-plate for the following reasons:

First. The flanges on the bottom of the chair are of such a size and width that they could not penetrate the wood of the tie and would therefore have no substantial resisting force against the lateral strain.

Second. If they were to be countersunk in the tie it would require the additional expense of the labor incident to the cutting out of the tie and

Third. If the tie were to be cut on its face to the extent necessary to receive these flanges it would necessarily weaken and shorten the life of the tie, and

Fourth. In equipping a new road with such a device it would be necessary, first, to cut out the tie upon its upper surface as heretofore stated, and each of the ties for the entire length of a rail and then place the device upon the ties before the rail could be laid, and

Fifth. In event it became necessary to replace any of such devices it would be necessary to remove the rail before the device could be inserted because the projecting flanges upon the upper face of the chair as well as the projecting flanges on the under face of the chair, would prevent the chair being slipped under the rail.

1007 I am therefore, for the reasons above stated, of the opinion that there is nothing in this Fisher device to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit No. 538,809.

I am confirmed in this opinion by Mr. Carter, defendant's expert, in his answer to X Q. 90:

"A. Because the device shown in this Fisher patent is not well adapted for use as an ordinary tie-plate, although possessing many of the characteristics of such a plate, I have not heretofore referred to it and would not voluntarily have done so."

Fisher Patent No. 360,673, April 5, 1887.

This patent is for a rail joint, and I have taken it up out of its order because of the fact that it is substantially the same kind of a structure as that shown in the Fisher Patent No. 313,067, just considered, and what I have said in relation thereto is equally applicable to this Fisher patent.

I am therefore of the opinion that there is nothing in this Fisher device to anticipate the tie-plate shown and described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Trude Patent No. 329,867, Nov. 3, 1885.

This patent is for a railroad track fastening. There is disclosed in one form, illustrated in Figures 1, 2 and 3, a flat metal plate having transverse projecting lugs, as shown in Figure 3, formed by punching the metal up from the bottom. These lugs, however, do not contact with the rail flange except through the intervention of the rail holding clasp C, which is in the form of a link extending through a depression cut in the tie, the ends protruding through the plate and bent inward to clasp the ends of the tie. Other
1008 forms show the metal plate elongated so as to extend over the width of the tie with depending flanges bent down over the outer surface of the tie and provided with spike-holes so that the spikes may be driven into the sides of the tie.

There is no form of tie-plate shown in this patent which would be at all feasible or practicable to use in the actual construction or operation of a railroad line, for the following reasons:

First. The ties would have to be cut or gouged out to receive the holding clasp C.

Second. This would have to be done to all the ties throughout the entire length of the rails and the track fastening put into place upon the tie before the rail would be laid, and

Third. In the case of repair or replacement the entire rail would have to be lifted before another track fastening device could be substituted.

If the plate shown in Figure 3 were to be considered alone as a tie-plate it is apparent that it is a flat-faced piece of metal, that it does not have a series of flanges on which the rail rests, that it does not have devices on its under side adapted to penetrate or engage the tie.

I am therefore of the opinion for the reasons heretofore stated that there is nothing in this Trude device to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

I am confirmed in this opinion by the answer of Mr. Carter, defendant's expert, to X Q. 95, where he said:

"A. I do not find that these Trude devices disclose any close resemblance to the tie-plate illustrated in either of the three Wolhaupter patents in suit."

Recess.

1009 Currier Patent No. 379,210, March 13, 1888.

This patent is for a wear-plate and shows a flat piece of metal provided with spike-holes with certain portions pressed up or down from the main body of the sheet forming spurs *k* to be driven into the tie and lugs *x* for the rail to abut against. The portion of the upper face of the plate upon which the rail flange rests is flat.

I am therefore of the opinion, for the reasons above expressed, that this patent does not anticipate the construction shown, described and claimed in the eighth claim of the Wolhaupter patent in suit No. 538,809.

I am confirmed in this conclusion by the admission of Mr. Carter in an extract from his answer to X Q. 96 wherein he says:

"This Currier tie-plate or wear-plate does not particularly resemble the devices of either of the Wolhaupter patents-in-suit."

Cote Patent No. 387,399, August 7, 1888.

This patent is for a railroad chair and is formed of a single piece of metal, the sides of which are bent up and clamp the sides of the rail. The bottom or base of the chair is concave on the under side and convex on the upper side forming an arch to give a flexible support for the base of the rail.

There is nothing in this device to suggest the purposes of the tie-plate under consideration, nor is there anything to indicate that the patentee had any conception of the use of this device for a tie-plate. It is nothing more than a slip-joint to hold the ends of abutting rails together.

I am therefore, for the reasons above expressed, of the opinion that there is nothing in this device to anticipate the structure shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

1010 I am confirmed in this opinion by the following extract from Mr. Carter's testimony, wherein he says in answer to X Q. 97:

"This device could not be used as a tie-plate and does not anticipate any of the Wolhaupter patents in suit."

Ashcroft Patent No. 388,240, Aug. 21, 1888.

This is a patent for the construction of railways and consists primarily in the cutting out of the tie to a depth equal to the flange of the rail, or, in other words, counter-sinking the rail into the tie and then providing a metal seat conforming to the cut-out portion of the tie.

On page 1 of the specification, commencing on line 100, the inventor says:

"In Figures 9 to 10, inclusive, I show the base or rail support and the chair made corrugated instead of flat. This provides a somewhat yielding or elastic connection between the rail and sleeper. I prefer when this construction is employed that there be interposed between the corrugated base or support and the sleeper a flat metal plate as represented in Figure 12 and upon which the corrugated base of the chair rests."

It is perfectly apparent that there are no depending flanges on the under side of this device adapted to penetrate and engage the tie, but on the contrary the tie must be cut out or countersunk to receive the base or rail support. This device could not be used for a tie-plate for the following reasons:

First. The tie would have to be cut away a sufficient width and a sufficient depth to permit of the counter-sinking of the base-plate therein and the cost of this operation would preclude its use, and

Second. In equipping a new line all the ties for the entire length of the rail would have to be so cut out and base-plates countersunk therein before the rail could be laid thereon, and

1011 Third. When it became necessary to replace the base-plate the entire rail would have to be lifted before the plate could be countersunk in the tie.

There is nothing in this patent to suggest its use as a tie-plate and there is nothing in the drawing or specification to indicate that the patentee had any conception of its use as a tie-plate.

Davies Patent No. 421,678, Feb. 18, 1890.

This is a patent for a wear-plate for railroad ties and there is shown a thin strip of metal provided with spike-holes and all the edges of the plate are slightly bent down so as to impinge against the railway tie. The upper surface of the wear-plate is smooth.

I am therefore of the opinion for the reasons above expressed that there is nothing in this patent to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit No. 538,809.

Goldie Patent No. 426,530, April 29, 1890.

This patent is for a railroad rail chair and shows a metal plate provided with spike-holes and at several points along its outer edges are raised portions *j* braced by supports *k* at right angles thereto. There are also provided similar braced supports adjacent to the spike-holes. On the under side of the tie-plate there are provided dull or

unsharpened projections which crush or break into the fibre of the tie. That portion of the upper face of the chair upon which the bottom of the rail flange rests is flat and is not therefore provided with flanges on which the rail rests.

I am therefore of the opinion, for the reasons above expressed, that there is nothing shown in this patent to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

1012 Goldie Patent No. 457,584, Aug. 11, 1891.

This patent is for a tie-plate and consists of a metal plate provided with spike-holes and a transverse flange crimped on the plate and extending across one margin of the plate. At opposite edges of the plate there are provided a series of triangular tooth-like depending projections adapted to penetrate the tie.

This tie-plate must be conceded to be impractical and of no utility in the art in view of what the patentee, Mr. Goldie, said of such a construction in his later patent No. 504,356, issued June 4, 1895, in the paragraph commencing with line 33, page 1, of the specification:

"It has been recognized that tie-plates to support the rail upon the tie would largely overcome these difficulties, and such plates have been devised, among others, the plates shown in Patent No. 457,584, granted to me August 11, 1891, which provided a shoulder on the upper face of the plate against which the outer edge of the rail flange pressed, and had at the ends of the plate downwardly projecting triangular prongs or claws which were adapted to enter the tie and to cut the same across the grain thereof, and so obtain a hold upon the tie to resist the lateral strain; the spikes passing through this plate and engaging with the rail flange to hold the same firmly to the tie. While this plate embodied certain valuable improvements there were some difficulties encountered in connection with the same, among others, the fact that, as the prongs or claws were triangular, there was liability of rocking action when the plate was driven to its place by the trackmen, and therefore it was difficult to drive. It was also objectionable in the fact that the triangular prongs, though extending some distance down into and cutting the tie for that distance, did not take any great hold upon the body of the tie except near the top face thereof, so that was the only part of the triangular body which was sufficiently broad to offer great resistance to the strain brought upon the tie-plate. It was also difficult to form this
1013 plate by a rolling operation and to produce cutting edges on the triangular prongs which would be sufficiently sharp to cut the wooden fibre without crushing or breaking the same."

As I have already pointed out this Goldie tie-plate is not provided with a series of flanges on its upper surface on which the rail rests.

I am therefore of the opinion that there is nothing in this patent that anticipates the tie-plate, shown, described and claimed in the eighth claim of the Wolhaupter patent in suit No. 538,809.

Goldie Patent No. 457,585, Aug. 11, 1891.

This patent is for a railroad rail brace and consists of two parts, an upper and a lower member, the lower member being substantially like that of the tie-plate shown and described in the preceding Goldie patent No. 437,584 except that the transverse flange extending across one margin of the plate is rolled upon the upper face of the plate in this latter patent instead of being crimped up as in the former patent, and what has been said heretofore in regard to the Goldie patent No. 457,584 is also true of this Goldie patent No. 457,585.

There is nothing in this Goldie patent now under consideration to suggest its use as a tie-plate nor is there anything in the specification to suggest that the patentee had any conception of its use as a tie-plate.

The upper face of the lower member of the rail brace is not provided with a series of flanges on which the rail rests, but is flat or smooth.

I am therefore of the opinion, for the reasons above stated, that this Goldie patent does not anticipate the tie-plate shown, described and claimed in claim 8 of the Wolhaupter patent in suit, No. 538,809.

1014 Kennish Patent No. 462,357, Nov. 3, 1891.

This patent is for a protector for the ends of beams. It is not in a kindred class, nor is there anything in it suggestive of a railway tie-plate.

I am confirmed in this opinion by the statement of Mr. Carter, defendant's expert, who says in answer to X Q. 100:

"The only bearing that this Kennish patent has upon the Wolhaupter patents in suit, is that it shows that it was old in other mechanical arts to make iron plates intended to bear against wooden beams with ribbed or flanged surfaces for engaging the beams."

I am therefore of the opinion that there is nothing in this patent which in any way anticipates the structure shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Dockstader Patent No. 462,399, Nov. 3, 1891.

This patent is for a lock rail joint and is cast in a single piece of metal and forms a slip joint for the adjacent ends of rails. There is nothing in this patent to suggest its use as a railway tie-plate, nor is there anything in the specifications or drawings thereof to indicate that the patentee had any conception of its use for such purpose.

In my opinion it would be wholly impracticable to use this lock-rail joint for a tie-plate for the following reasons:

First. From an economical standpoint its cost would be too great, and

Second. It would be impossible to use it economically as a tie-

plate for the simple reason that in equipping a railroad line with such a device it would be necessary that as many of them as there were ties in the length of a rail would have to be slipped or strung on the rail before it could be laid on the tie, and

1015 Third. If one of them should break or for any reason it should be necessary to substitute another one therefor, all of said joints would have to be loosened from all of the ties the entire length of the rail and the rail-joints slipped off or slipped along the rail until the broken one was reached and a new one substituted therefor, and then the four spikes in each one of all the rail-joints along the entire length of the rail redriven into the tie.

I am confirmed in this view by the following extract taken from the cross-examination of Mr. Carter, defendant's expert:

"X Q. 114. Please look at 'Defendant's Exhibit Dockstader Patent for Lock Rail-Joint No. 462,399.' Do you consider this a rail 'tie-plate device'?

"A. No, although its base portion is very analogous to a tie-plate.

"X Q. 115. This lock rail-joint of the Dockstader patent is adapted primarily for use at the adjacent ends of rails to join their abutting ends together, is it not?

"A. Yes.

"X Q. 116. And if one of these devices was so used in track to lock or join the rail ends together, it would not be possible, after the track was thus laid, would it, to insert other of these Dockstader lock-joints between the rail and the ties on the intermediate ties?

"A. No."

I am therefore of the opinion, for the reasons heretofore stated, that there is nothing in this patent to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809

Parsons Patent No. 465,492, Dec. 22, 1891.

This patent is for a railway chair and shows a flat strip of metal provided with spike-holes and having punched downward from its upper surface two prongs to engage the tie and punched up

1016 from its under surface a small flange *b* which extends transverse a portion of the plate and adapted to receive the outer flange of the rail.

The upper face of the plate for that portion thereof upon which the bottom of the rail flange rests is smooth and is not provided with a series of projecting flanges on which the rail rests.

For the reasons above stated I am of the opinion that there is nothing in this patent to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Dunham Patent No. 469,386, Feb. 23, 1892.

This patent is for a railroad tie-plate and consists as is shown in Figures 1, 2 and 3 of a sheet of corrugated metal three-sixteenths of

an inch thick provided vith spike-holes. It is intended that this piece of corrugated metal should be inserted between the upper face of the tie and the bottom of the rail flange. It is not intended, according to the description and specification that the corrugations on the under side of the plate should penetrate and engage the tie. Indeed, the inventor describes in the paragraph commencing with line 72, page 1, of the specification, that these corrugations are for the purpose of forming air spaces between the bottom of the plate and tie. The paragraph referred to is as follows:

"Secondly, the corrugations in the tie-plate form air-spaces between the bottom of the plate and the tie, preventing the long continued presence of moisture in the wood under the tie-plate and thus obviating the rapid decay of the wood, which is found to take place under a flat tie-plate, the free access of air afforded by the corrugations to both surfaces of the tie-plate also having a tendency to prevent resting of the tie-plate."

Thus it will be seen from the specifications itself that there is no suggestion in this patent of the projections on the under side
1017 of the corrugated plate being adapted to penetrate the wood. On the contrary, the opposite is stated and the objects of the patentee would not be obtained if they did penetrate the wood.

It is perfectly manifest to me from my knowledge of railroad operations that a three-sixteenth inch corrugated sheet plate placed between the upper face of the tie and the bottom of the rail-flange would not stand up but would be crushed and flattened out by the use of such railway equipment of such weight as was commonly used at the date of this patent, to-wit, February 23, 1892.

In Fig. 4 there is shown another form of tie-plate which is evidently a rolled plate perfectly smooth upon its top and provided with what might be called corrugations upon its bottom which are not sharpened and are not intended to sink into the wood of the tie, but are intended to rest upon the upper surface of the tie so as to provide air spaces between the bottom of the plate and the top of the tie.

For the reasons above expressed I am therefore of the opinion that there is nothing in this patent that anticipates the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Heath Patent No. 474,129, May 3, 1892.

This patent is for a rail joint and there is nothing in it to suggest a tie-plate. Its various parts are rigidly bolted together and to the rail. It is only intended to join the abutting ends of two rails together and hold them in rigid position. It becomes thereby a part of the rail, and its pounding and wearing upon the tie would be substantially the same as that of the rail.

There is nothing about this device to suggest its use for a railway tie-plate, nor is there any intimation that the inventor thereof had any conception or understanding of such use.

1018 I am confirmed in my opinion by the following extract from Mr. Carter's answer to X Q. 101 wherein he was asked

as to whether or not the rail-joint of this Heath patent could be used as a tie-plate and he answered as follows:

"No, it could not be used as an ordinary tie-plate without discarding a number of features of its construction."

I am therefore of the opinion, for the reasons above stated, that there is nothing in this Heath patent to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Hane Patent No. 481,171, Aug. 23, 1892.

This patent is for a railroad joint and consists of two parts which are securely bolted to each other and to the rail, thus becoming integral parts of the rail and pound and wear upon the tie as the rail itseelf would. It is intended only to join the abutting ends of the rails together and to hold them in rigid position. There is nothing about this device to suggest its use for a railway tie-plate, nor is there anything in the specification or drawings to indicate that the inventor had any conception of such a use.

I am confirmed in my view by the following extract from Mr. Carter's answer to X Q. 118 wherein he was asked what bearing, if any, this Hane patent had on the Wolhaupter patent in suit and he answered as follows:

"No particular bearing. It simply shows another example of rail-joint construction, including a base-plate which in some respects acts like a tie-plate, and may similarly intervene between the rail and tie-plate."

I am therefore of the opinion, for the reasons above ex-
1019 pressed, that there is nothing in this Hane patent to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Goldie Patent No. 485,030, Oct. 25, 1892.

This patent is for a tie-plate and at the date thereof railway rails were rolled full in the center of the under side of the flange and the inventor evidently was seeking to provide a tie-plate which would accommodate itself to this form of rail flange. There is shown a flat piece of metal provided with spike holes, the center of the plate depressed transversely, and along one side of the upper face of the plate there is provided a flange to receive the lateral thrust of the rail. On the under side of the plate there are provided transverse projections more or less sharpened adapted to penetrate the tie. The object of the transverse central depression is stated in the specifications, page 1, commencing with line 43, as follows:

"The object of my invention is to provide a tie-plate for resting between the rail and tie, in which the middle portion which carries the rail, will be supported in such a way as to avoid the common difficulty of depressing the middle portion and elevating the lateral portions by the action of the passing trains."

There are no projecting flanges on the top of the plate upon which the rail rests.

The metal of the plate is of the same thickness throughout its length except where the more or less sharpened flanges, adapted to penetrate the tie, appear on the bottom of the plate and where the transverse flange adapted to receive the lateral thrust of the rail is formed on the upper surface of the plate.

As I have heretofore referred to and quoted from that portion of the deposition of Mr. Carter, defendant's expert, in which he
1020 says that this patent to Goldie and the patent to Wells are the best references in the prior art produced by the defendant, I need not again refer to that quotation, but Mr. Carter in answer to X Q. 138 admits that he does not find in the top surface of this Goldie plate any depression, channel or corrugation placed in the top surface of the plate for the purpose of lightening the plate. The question and his answer thereto being as follows:

"X Q. 138. Do you find in this Goldie patent any groove or depression or channel or corrugation placed in the top surface thereof for the purpose of lightening the plate?

"A. No."

In this Goldie tie-plate there is a total absence of anything like a series of flanges on which the rail rests.

The only flange appearing upon the upper face of the plate is that against which the outer edge of the rail flange abuts.

I am therefore of the opinion, for the reasons heretofore set forth, that notwithstanding Mr. Carter's statement that this is the best prior art reference in the case, that there is nothing in this Goldie patent No. 485,030, to anticipate the railway tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit No. 538,809.

Reece Patent No. 488,662, Dec. 27, 1892.

This patent is for a wear-plate for a railroad tie and shows a cast-metal tie-plate with saw teeth projections on the under side and on its upper surface an inclined plane terminating in a flange intended to abut against the flange of the rail.

The upper face surface of the inclined plane is smooth.

There is a complete absence of a series of or any flanges upon which the rail rests.

I am therefore of the opinion, for the reasons hereto-
1021 fore expressed, that this patent to Reece does not show anything that anticipates the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Churchward Patent No. 492,528, Feb. 28, 1893.

This patent is for a wear-plate and shows a plate of metal of equal thickness throughout its length and breadth provided with spike holes and upon its under side with a single depending flange more

or less sharpened and on its upper side with a transverse flange extending along one side of the plate for the flange of the rail to abut against.

The upper face of the plate is smooth.

There are no projecting flanges of any kind upon the upper side of the plate on which the rail rests.

I am therefore of the opinion, for the reasons above expressed, that this Churchward patent does not show anything that anticipates the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

And thereupon an adjournment was taken to Wednesday, June 22, 1910, at 10 o'clock, a. m.

G. R. WILKINS,
Notary Public.

1022 CHICAGO, ILLINOIS, June 22, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

The witness, MAJOR MILLER, resumes his answer to Q. 6.

Reece Patent No. 494,692, April 4, 1893.

This is a patent for the method of making railroad tie-plates. The result of employing this method is to produce a tie-plate provided with spike-holes and having on its under side three depending flanges more or less sharpened and on its upper face two projecting ribs or flanges which are then subjected to a punch and a portion of both these ribs or flanges equal to the width of the face of the bottom of the rail flange is completely punched out of the plate leaving a series of four projecting lugs, one upon each corner of the plate against which the flange of the rail rests to prevent its lateral movement.

The face of the plate upon which the rail flange rests is smooth.

There are no projecting flanges on the top of this face upon which the rail flange rests.

I am confirmed in my view of this plate by reference to the testimony of Mr. Carter as follows:

"X Q. 157. Does not the Reece patent No. 494,692, show a flat top surface for the flange of the rail to rest upon?

"A. It shows a flat surface cut away in two places, so that the bearing surface is interrupted and divided into three supporting surfaces.

"X Q. 160. And there are no top flanges but a plain flat top surface for the rail to rest upon in the Reece patent No. 541,984?

"A. Yes. By top flanges, you, of course, mean flanges
1023 for the rail to rest upon. Most of these patents show flange-like shoulders for the edge of the rail to abut against, but I understand that your question does not have these in mind."

And therefore, for the reason above explained, I am of the opin-

ion that there is nothing shown in this Reece patent to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Holmes Patent No. 495,807, April 18, 1893.

This patent is for a tie-plate of substantially the same kind with very slight modifications as that of the Reece patent just considered and what was said of the Reece patent is also true of this Holmes patent.

The face of the plate upon which the flanges of the rail are intended to rest is smooth.

There are no projecting flanges on the top of the face upon which the rail flanges are intended to rest.

I am confirmed in this view by reference to the answer of Mr. Carter, defendant's expert, to X Q. 158, in which he concedes that this Holmes patent shows a plain flat surface for the rail flange to rest upon.

I am therefore of the opinion, for the reasons above expressed, that this Holmes patent does not anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538, 809.

Worthington Patent No. 306,963, Oct. 17, 1893.

This patent is for a method for making railroad tie-plates. A tie-plate bar is first rolled with a series of longitudinal ribs upon both faces. It is then cut up into the desired lengths, the spike-holes punched and the longitudinal ribs upon the upper face or so much thereof as may be necessary are cut away to permit the rail to rest upon the upper smooth surface of the plate. The
1024 remaining portion of the longitudinal ribs are intended to abut against the edge of the rail flange to resist the lateral thrust of the rail.

The face of the plate upon which the bottom of the flange of the rail is intended to rest is smooth.

There are no projecting flanges on the top of the face upon which the bottom of the rail flanges are intended to rest.

I am therefore of the opinion, for the reasons above expressed, that this Worthington patent does not anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Churchward Patent No. 508,086, Nov. 7, 1893.

This patent is for a wear-plate and shows a plate with depending teeth or prongs on its under side and upon its upper surface two transverse flanges to engage the outer edges of the rail flange and to receive the lateral thrust thereof.

The face of this plate upon which the bottom of the flanges of the rail are intended to rest is smooth.

There are no projecting flanges on the top of the face upon which the bottom of the rail flanges are intended to rest.

I am confirmed in this view by reference to the testimony of Mr. Carter, defendant's expert, in answer to X Q. 150 wherein he concedes that in this patent there are no top flanges but a plain flat top surface for the rail to rest upon.

I am therefore of the opinion, for the reasons above expressed, that in this Churchward patent there is nothing to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

1025 Holmes Patent No. 514,465, Feb. 13, 1894.

This patent is for a railway tie-plate. It shows a two-part plate, the lower portion having projecting flanges more or less sharpened and spike-holes punched therethrough, and large square perforations a^1. The upper portion of the plate has, upon its opposite edges, projecting flanges adapted to receive the lateral thrust of the rail and having in its central portion intermediate the flanges projections c of a size slightly less than the perforations a^1 in the lower plate which they are intended to enter and be seated in. The two parts being thus seated together form the tie-plate described in the patent and when spiked to the rail the two parts are securely fastened to each other and would, in my opinion, present a substantially smooth upper surface for the rail to rest upon.

There certainly are no projecting flanges on the upper face of the plate for the rail to rest upon.

I am therefore of the opinion, for the reasons above expressed, that this Holmes patent does not anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Holmes Patent No. 514,466, Feb. 13, 1894.

This patent is for a railway tie-plate and shows a tie-plate with spike-holes and on its under side depending flanges sharpened and on each corner of its upper surface a portion of the metal is turned up upon the face to form at each corner thereof a lug to receive the lateral thrust of the rail.

The face of the plate upon which the flanges of the rail are intended to rest is smooth.

There are no projecting flanges on the top of the face upon which the rail flanges are intended to rest.

1026 I am again confirmed in this view by reference to the answer of Mr. Carter, defendant's expert, to X Q. 160, in which he concedes that this Holmes patent shows a plain flat surface for the rail flange to rest upon.

I am therefore of the opinion, for the reasons above expressed, that this Holmes patent does not anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Holmes Patent No. 514,467, Feb. 13, 1894.

This patent is for a method of making railway tie-plates and there is produced as a result of its employment a tie-plate having spike-holes and longitudinal flanges depending from its lower surface and on its upper face transverse flanges to receive the lateral thrust of the rail.

The face of the plate upon which the flanges of the rail are intended to rest is smooth.

There are no projecting flanges on the top of the face upon which the rail flanges are intended to rest.

I am confirmed in this view by reference to the answer of Mr. Carter, defendant's expert, to X Q. 160, in which he concedes that this Holmes patent shows a plain flat surface for the rail flange to rest upon.

I am therefore of the opinion, for the reasons above expressed, that this Holmes patent does not anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Harris Patent No. 514,828, Feb. 13, 1894.

This is a patent for tie-plates and shows a flat metal plate having spike apertures and two or more depending portions more or less sharpened on its under side and two projecting lugs turned up upon its upper surface to receive the lateral thrust of the rail.

1027 The face of the plate upon which the flanges of the rail are intended to rest is smooth.

There are no projecting flanges on the top of the face upon which the rail flanges are intended to rest.

I am again confirmed in this view by reference to the answer of Mr. Carter, defendant's expert, to X Q. 103, in which he concedes that this Harris patent shows a tie-plate, the rail supporting surface of which is flat.

I am therefore of the opinion, for the reasons above expressed, that this Harris patent does not anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Wilson Patent No. 522,867, July 10, 1894.

This is a patent for a tie-plate and shows another form of two-part plate, the main portion thereof consisting of a flat bottom plate having spike apertures and having two or more depressions to receive the second part B called a guard device. This device B is formed with lugs upon its ends of sufficient size to receive the lateral thrust of the rail and provided on its under side with two or more shanks sharpened at their ends to penetrate the tie.

In operation the main or base plate is laid upon the tie. The guard devices are then inserted through apertures in the main plate and driven down into the tie. The rail is then laid over the plate

and spikes driven into the tie. It is manifest from this statement that this tie-plate could not be used and would not be practical in actual operation for the following reasons:

First. It being made of two parts its original cost and additional cost of handling would preclude its employment, and

Second. It could not be used on roads upon which the rails had already been laid for the reason that the entire length of the rail would have to be raised, all spikes removed throughout the
1028 length of the rail, the rail lifted before this form of tie-plate could be placed upon the tie, and

Third. The same operation would have to be repeated in case of a substitution of a new tie-plate for one broken or worn out.

When the two parts are put together the upper face upon which the rail flanges are intended to rest is substantially smooth, because the guard devices substantially fill up and occupy the depressions formed to receive the same in the lower plate.

I am therefore of the opinion, for the reasons above expressed, that this Wilson patent does not anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Servis Patent No. 524,868, Aug. 21, 1894.

This patent is for a railway tie-plate and discloses a flat bottom plate provided with spike apertures and on its under side oppositely disposed depending flanges more or less sharpened, while upon its upper flattened surface, near the edges thereof, there are projecting transverse flanges to receive the lateral thrust of the rail.

The face of the plate upon which the flanges of the rail are intended to rest is smooth.

There are no projecting flanges on the top of the face upon which the rail flanges are intended to rest.

I am confirmed in this view by reference to the answer of Mr. Carter, defendant's expert, to X Q. 160, in which he concedes that in this Servis patent there are no top flanges, but a plain flat surface for the rail to rest upon.

I am therefore of the opinion, for the reasons above expressed, that this Servis patent does not anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

1029 Clark Patent No. 529,854, Nov. 27, 1894.

This is a patent for a tie-plate and shows a flat metal plate having spike apertures and on its under side a series of depending lugs or prongs more or less sharpened while on its upper surface there is provided a transverse rib or shoulder to receive the thrust of the rail.

The face of the plate upon which the flanges of the rail are intended to rest is smooth.

There are no projecting flanges on the top of the face upon which the rail flanges are intended to rest.

Mr. Carter, defendants' expert, concurs with this view in his answer to X Q. 160, in which he concedes that in this Clark patent there are no top flanges but a plain flat surface for the rail to rest upon.

I am therefore of the opinion that there is nothing shown in this Clark patent that anticipates the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Gabel Patent No. 530,175, Dec. 4, 1894.

This patent is for a combined tie-plate and rail brace and consists of a flat piece of metal provided with spike-holes and having on its under side depending sharpened flanges. A portion of one end of the tie-plate is then bent up and forward over one flange of the rail to form a rail brace.

The face of the plate upon which the flange of the rail is intended to rest is smooth.

There are no projecting flanges on the top of the face on which the rail is intended to rest.

Mr. Carter, defendants' expert, concurs with this view in his answer to X Q. 160, in which he concedes that in this Gabel patent there are no top flanges but a plain flat surface for the rail to rest upon.

1030 I am therefore of the opinion that there is nothing in this Gabel patent that anticipates the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Wolhaupter Patent No. 530,738, Dec. 11, 1894.

This patent is for a tie-plate and shows and describes a tie-plate one form of which consists of a flat top and having on its under side more or less sharpened depending lugs or spurs. Another form is shown in which a transverse flange is provided on the upper surface to receive the lateral thrust of the rail and still another form is shown in which instead of a transverse flange intended to receive the thrust of the rail being continuous there are three projecting lugs provided on each side of the plate for the same purpose.

The face of the plate in each instance upon which the rail is intended to rest is smooth.

There are no projecting flanges on the top of the face upon which the rail flange is intended to rest.

I am therefore of the opinion that there is nothing shown in this Wolhaupter patent that anticipates the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Morrell Patent No. 531,637, Jan. 1, 1895.

This patent is for a wear-plate and shows a plate having projecting lugs more or less sharpened on its under side and in another form

ribs arranged in different positions on the under side for the same purpose, that of entering the tie. On its upper face there are provided two transverse flanges to receive the lateral thrust of the rail.

This tie-plate constructed in the form shown in Figs. 1, 2, 3 and 4 with the projecting lugs on the bottom of the plate arranged
1031 as shown in said figures, would cut up and out the upper surface of the tie, and instead of preserving the same would have the tendency to destroy it.

The face of the plate upon which the flange of the rail is intended to rest is smooth.

There are no projecting flanges on the top of the face upon which the rail flange is intended to rest.

Mr. Carter, defendant's expert, concurs in this view in his answer to X Q. 160, in which he concedes that in this Morrell patent there are no top flanges but a plain flat surface for the rail to rest upon.

I am therefore of the opinion that there is nothing in this Morrell patent that anticipates the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Stewart Patent No. 535,963, March 19, 1895.

This patent is for a tie-plate and shows substantially the same kind of a plate as that illustrated in the patent to Morrell No. 531,637, above referred to, with the exception that the depending flanges or prongs on the bottom of the plate are not sharpened and this tie-plate, in my opinion, would not be practical for the reason that the blunted depending flanges or prongs on the bottom of the plate are so located that they will have a tendency to break up and destroy the fibre of the tie.

There are two projecting lugs formed upon the upper surface of the tie-plate for the rail flanges to abut against.

The face of the plate upon which the flanges of the rail are intended to rest is smooth.

There are no projecting flanges on the top of the face upon which the rail is intended to rest.

Mr. Carter, defendant's expert, concurs in this view in his answer to X Q. 160, in which he concedes that in this Stewart patent there are no top flanges but a plain flat surface for the rail to rest upon.

1032 I am therefore of the opinion, for the reasons above expressed, that there is nothing shown in this Stewart patent to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Wolhaupter Patent No. 538,808, May 7, 1895.

This patent is for a tie-plate and shows a plate having spike-apertures and provided on its under side with more or less sharpened depending lugs to penetrate the tie and on its upper face two oppositely disposed, transverse flanges projecting above the plane of the plate to receive the lateral thrust of the rail.

The face of the plate upon which the rail is intended to rest is smooth.

There are no projecting flanges upon the top of the face upon which the rail is intended to rest.

Mr. Carter, defendant's expert, concurs in this view in his answer to X Q. 160, in which he concedes that in this Wolhaupter patent there are no top flanges but a plain flat surface for the rail to rest upon.

I am therefore of the opinion, for the reasons above expressed, that there is nothing shown in this Wolhaupter patent to anticipate the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809.

Résumé.

Bearing in mind that the eighth claim of the Wolhaupter patent in suit, No. 538,809, calls for a tie-plate per se in which there is employed a thin metal plate provided with spike-holes, projecting devices on the bottom thereof more or less sharpened, and projecting flanges on the top of the plate upon which the rail rests, I have conclusively pointed out that nowhere in the prior art patents is
1033 there shown a tie-plate having a series of projecting flanges upon its upper face upon which the rail is intended to rest.

Mr. Carter, defendant's expert, has repeatedly asserted that the patent to Wells, No. 203,570, for "Railway Chair" and the patent to Goldie, No. 485,030, for a "Tie-Plate," are the best prior art references set up by the defendant.

I have, I think, conclusively shown by the admissions of Mr. Carter and Mr. Faulkner, as well as by the consideration of the patent itself, that this Wells device could not be used as a railway tie-plate without radical reconstruction and reorganization and that there is no suggestion in the patent itself that the patentee had any conception of its use as a tie-plate.

It is also pretty conclusive to my mind that there was no disclosure or suggestion in this Wells railway chair of its adaptation to a tie-plate for the reason that in the seventeen years intervening between the date of the Wells patent and the date of the Wolhaupter patent in suit, No. 538,809, there was no such application of it, and it is also clear to my mind that it took the Wolhaupter patent in suit, No. 538,809, to suggest such a possibility to defendant's expert.

As to the Goldie patent for a tie-plate No. 485,030, its pertinency as a prior art reference is destroyed by the concession of defendant's expert that there is a total absence of anything like a series of flanges on the upper face of the plate on which the rail rests.

As further conclusive evidence that Mr. Goldie had no conception of the employment of a series of flanges on the upper face of the plate for the rail to rest upon, it may be interesting at this point to note the inventive efforts of Mr. Goldie, who was not only a prolific inventor, having taken out some seven patents, but was also a
1034 contemporary of Wolhaupter and was also having his tie-plates put upon the market. In the following Goldie letters-

patent of a date earlier than the Wolhaupter patent in suit, No. 538,809, five in number, there is no suggestion of the employment of a series of flanges on the face of the plate on which the rail rests.

No. 426,530, April 29, 1890;
457,584, Aug. 11, 1891;
457,585, Aug. 11, 1891;
485,030, Oct. 25, 1892; and
540,356, June 4, 1895;

this latter patent being of a date later by one month than the Wolhaupter patent in suit, No. 538,809. Not until after the Wolhaupter tie-plate manufactured under letters-patent No. 538,809, issued May 7, 1895, the patent in suit, appeared upon the market, did Mr. Goldie show a tie-plate with projecting flanges on top of the plate upon which the rail rested, then followed letters-patent No. 610,179, September 6, 1898, and No. 631,039, August 15, 1899.

I have had prepared and here produce a sketch in cross-section of each one of the plates illustrated in the patents referred to in the order of the date of their issue from which it will be perfectly plain that Mr. Goldie had no conception of the use on the upper surface of the tie-plate of a series of flanges upon which the rail should rest until after he saw the Wolhaupter tie-plate.

In conclusion, I am therefore of the opinion, for the reasons given, that there is nothing in the prior patented art to anticipate, limit, restrict or qualify claim 8 of letters-patent No. 538,809, issued to Mr. Wolhaupter, May 7, 1895.

Recess.

1035 Considering now the patented prior art applicable to the Wolhaupter patent No. 691,332, issued January 14, 1902, the same being the second patent in suit, bear in mind that the object sought to be accomplished by the patentee in this patent is the production of a tie-plate in which the flanges on the lower side of the plate adapted to penetrate the tie are located directly beneath those on the upper side of the plate upon which the rail rests, that by this construction the pressure from the rail is continued through the upper flanges into the lower flanges tending to hold the same securely in engagement with the tie.

All the claims at issue in this patent, to-wit, claims 1, 2 and 3 embody this feature.

In the review of the prior art as applied to the earlier Wolhaupter patent No. 538,809, we were unable to find in any of the prior patents a tie-plate having a series of flanges on its upper face on which the rail rested and for that reason it must also follow that we did not find in any of said letters-patent the flanges on the under side of the plate for engaging the tie directly beneath those on the upper side (for there were none on the upper side) as is called for by the claims of the patent now under consideration.

For like reasons the following patents may be readily disposed of, for it is apparent from even a cursory examination thereof that

they do not show or even suggest a tie-plate provided on its upper side with flanges upon which the rail may rest.

No. 538,817, Chamberlin, May 17, 1895;
538,808, Wolhaupter, May 7, 1895;
540,356, Goldie, June 4, 1895;
541,984, Reece, July 2, 1895;
542,352, Quincy, July 9, 1895;
542,787, Wolhaupter, July 16, 1895;
1036 566,828, Weed, September 1, 1896;
573,543, Sellers, December 22, 1896;
574,773, Avery, January 5, 1897;
584,603, Richards, June 15, 1897;
592,865, Cloud, November 2, 1897;
603,563, Harris, May 3, 1898;
636,982, Hanna, November 4, 1899.

This latter patent to Hanna is for a beam shoe for holding beams in position in the wall. It is not a kindred art and can have no bearing on the patents in suit in this case.

The filing date of the Wolhaupter patent in suit No. 691,332 now under consideration, was May 3, 1897, although it was not issued until January 14, 1902.

The following patents, though earlier in date of issue than the Wolhaupter patent in suit now under consideration, were later in filing date and therefore can not be considered as anticipating the patent under consideration.

No. 610,179, Goldie, filed May 27, 1898, issued September 6, 1898.

No. 622,965, Morrison, filed October 25, 1898, issued April 11, 1899.

No. 631,039, Goldie, filed June 12, 1899, issued August 15, 1899.

No. 631,873, Kinney and Trueblood, filed March 29, 1899, issued August 29, 1899.

No. 649,629, Charleton, filed April 17, 1899, issued May 15, 1900.

No. 662,850, Avery, filed January 5, 1900, issued November 27, 1900.

No. 684,466, Sellers, filed February 4, 1901, issued October 15, 1901.

No. 691,037, Wolhaupter, filed May 11, 1899, issued January 14, 1902.

1037 No. 691,317, Jones, filed July 12, 1899, issued January 14, 1902.

The only remaining patents to be considered as applicable to the Wolhaupter patent under consideration, No. 691,332, are three.

Wolhaupter Patent No. 579,509, March 23, 1897.

This patent is for a railway tie-plate and is intended to be rolled in bar-form, then cut into length and the tie engaging projections punched from the central portion downward forming V-shaped projections to engage the tie. These projections, however, are not directly under, nor substantially beneath any rail supporting flange projecting from the upper face of the tie-plate and therefore this

patent fails to show one of the essential elements of all the claims in issue of the Wolhaupter patent in suit No. 691,332.

I am therefore of the opinion, for the reasons above expressed that this Wolhaupter patent does not anticipate the tie-plate shown, described and claimed in the first, second and third claims of the Wolhaupter patent in suit, No. 691,332.

Tillinghast Patent No. 584,248, June 8, 1897.

This patent is for a track fastening and shows a metal tie-plate having double ribs on both sides of the plate, said ribs being blunted. The inventor says, line 68, page 1, of the specification:

"The ribs which are adapted to settle in the upper face of the cross-tie to obtain a firm seat on the same have blunt lower edges whereby they are adapted to support the body of the plate above the upper face of the cross-tie."

From this quotation it would be apparent that the ribs referred to are provided for an entirely different purpose from those
1038 of the depending flanges of the Wolhaupter patent under consideration No. 691,332, which are for the purpose of engaging and penetrating the tie and their very purpose in being located directly beneath the rail supporting flanges on the upper surface of the plate is that they may be driven into the tie and securely held there by the weight of the passing traffic.

It is also apparent that the space between the flanges upon the upper face of the plate do not perform the function of draining the plate and preventing the sand from accumulating under the rail, for the inventor says that he has provided rail supporting clamps which "fit snugly in the depressions or recesses at the upper face of the plate between the ribs."

I am therefore of the opinion, for the reasons above expressed, that there is nothing in this Tillinghast patent which anticipates the tie-plate shown, described and claimed in claims 1, 2 and 3 of the Wolhaupter patent in suit No. 691,332, now under consideration.

Wolhaupter Patent No. 636,607, Nov. 7, 1899.

This patent is for a railway tie-plate and consists of a two-part plate and in some forms provided with an adjustable feature. The top of the plate is flat and therefore is not provided with projecting flanges on which the rail rests. There being no projecting flanges on the top or face of the plate upon which the rail rests, it is self-evident that there can be no flanges on the under side of the plate in line therewith.

I am therefore of the opinion, for the reasons set forth, that there is nothing in this Wolhaupter patent which anticipates the tie-plate shown, described and claimed in claims 1, 2 and 3 of the Wolhaupter patent in suit, No. 691,332, now under consideration.

1039 Résumé.

Briefly stated, I am unable to discover anywhere in the prior art, set up in this case and applicable to the patent under consideration, a railway tie-plate provided with projecting flanges on the upper face thereof on which the rails may rest and directly beneath the same depending flanges on the bottom of the plate to engage and penetrate the tie, nor do I find anywhere in the prior art set up in this case and applicable to the patent in suit under consideration, No. 691,332, such a plate as I have described with an additional flange extending above the plane of the rail sustaining flanges and adapted to receive the lateral thrust of the rail, nor do I find in the prior patented art set up in this case applicable to the patent under consideration anything indicative or suggestive which would tend to show that any of said numerous patentees had any conception of the principle and purposes of the construction shown, described and claimed in claims at issue of the Wolhaupter patent under consideration No. 691,332.

In conclusion I am therefore of the opinion that there is nothing in the prior patented art to anticipate, limit, restrict or qualify claims 1, 2 and 3 of letters-patent No. 691,332, issued to Mr. Wolhaupter January 14, 1902.

Considering the prior art applicable to the Wolhaupter patent No. 721,644, issued to Mr. Wolhaupter, February 24, 1903, and keeping in mind that the patentee in this patent had two objects in view among others, to-wit:

First. The manufacture of a tie-plate with the least amount of metal consistent with durability and strength with a view to cheapening the cost of manufacture, and

Second. The manufacture of a tie-plate of such a configuration upon its surface that water, sand or other deleterious materials
1040 will be drained off or away from the same. To accomplish this purpose the inventor has provided a tie-plate upon the upper surface of which there is provided a series of sand spaces, channels or grooves, which grooves or channels run transverse the plate and in line with the rail to be seated over the same. Transverse one side of the plate there is provided a transverse rail abutting shoulder.

Both of these claims at issue in this Wolhaupter patent No. 721,-644, embody these features.

Of all the prior art patents which I have considered heretofore in relation to the other Wolhaupter patents in suit, there is only one to Wells, No. 203,570, which shows grooves in the upper face in line with the rail. In view of the concession of the defendant's expert, Mr. Carter, and my own conclusions and explanations why this device could not be used as a railway tie-plate and therefore that it does not suggest a railway tie-plate, I need not again consider it in this connection. The other patent referred to in consideration of the other patents in issue in this case is No. 280,030, issued to Gould in which there are shown transverse depressions running with the length of the rail but which depressions are intended to receive corresponding flanges on the bottom of the rail flange, and inasmuch as there is nothing in this patent suggestive that these depressions are for the

same purpose as the series of sand spaces, channels and grooves set forth in the patent at issue under consideration, I need not further consider this Gould patent.

Wolhaupter Patent No. 579,509, March 23, 1897.

This patent is for a railway tie-plate and was referred to in considering the second Wolhaupter patent at issue in this case. It does not show a series of channels or grooves, but shows a single channel extending practically from one rail supporting surface to an-
1041 other and there is nothing in this Wolhaupter patent to suggest a series of grooves of the Wolhaupter patent in suit now under consideration, and this is perfectly apparent when we take into consideration that the patentees are one and the same person.

Wolhaupter Patent No. 691,037, Jan. 14, 1902.

This patent is for a rail joint. Its parts are securely bolted to each other and to the rail and therefore pound and saw the rail to the same extent as the rail would if it were used without the joint. It is intended to join the ends of abutting rails together and to be suspended between two ties. There is shown in Fig. 10 and Fig. 11 a base-plate C which has a series of grooves upon its upper face, but there is nothing in this patent to suggest the use of this base-plate as a tie-plate, nor would it be possible to so use it because of its peculiar configuration.

There is nothing in this patent to suggest that the series of grooves on the upper face of the base-plate is for the same purpose as the series of sand spaces, channels or grooves in the Wolhaupter patent under consideration, and this must be apparent when we take into consideration the fact that the patentee in the two patents is one and the same person.

Hart Patent No. 696,964, April 8, 1902.

This patent is for a tie-plate and shows a substantially flat upper surface with a series of gouges or grooves commencing on a line with the center of the plate and widening as they approach and terminate at the edge of the plate. There is nowhere shown grooves running transverse the plate and reaching from edge to edge thereof. There is nowhere shown at one margin of said plate a transverse rail abutting shoulder.

1042 These gouged out portions in the Hart plate would not perform the function of the transverse groove running from edge to edge of the plate of the Wolhaupter patent under consideration, for the reason that the suction produced by the passing train would only serve to draw sand up on to the face of the plate and leave it there inasmuch as the grooves terminated on the middle face of the plate and do not pass completely across the surface of the plate from edge to edge. This Hart plate, therefore, would not perform the functions intended to be performed by the plate shown, described and claimed in the Wolhaupter patent under consideration.

For the reasons above stated I am of the opinion that the Hart patent would not anticipate the tie-plate shown, described and claimed in claims 7 and 9 of the Wolhaupter patent in suit, No. 721,644.

And thereupon an adjournment was taken to Thursday, June 23, 1910, at 10 o'clock a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, June 23, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

The witness, MAJOR MILLER, resumes his answer to Q. 6.

Anderson Patent No. 700,714, May 20, 1902.

This patent is for a railway rail joint and consists of two parts which are securely bolted together and to the rail and therefore become an integral part of the rail and must necessarily pound, saw and cut the tie as the rail would itself without the intervention
1043 of the joint. Its purpose is to fasten the adjacent ends of two rails together.

Its construction and organization consists of two fish-plates and a wedge-plate C. The wedge-plate is channeled longitudinally upon its upper surface and has on one edge thereof an upwardly projecting flange which bears against the edge of the rail. The under side of this wedge-plate is beveled on each edge so as to wedge into the fish plate and although of a sufficient length to pass over the upper surface of two ties, it is held up therefrom by the feet of the fish-plate and does not contact with the tie.

It will be impossible to use this wedge-plate or any portion thereof for a tie-plate for the reason that its beveled edges form a convex bottom of such a character as to prevent its being seated upon the tie.

I*n* am confirmed in this view by the following extract from Mr. Carter's answer to X Q. 109 in which he says of this base-plate of the Anderson patent as follows:

"Owing to its generally convex bottom, however, this base-plate would not be well adapted for use as an ordinary tie-plate."

There is nothing in this patent that suggests that the same could be used as a tie-plate, nor is there anything to indicate that the patentee had any conception of its use for that purpose. It is certainly apparent that it could not be so used without undergoing a complete reorganization and a radical change in construction amounting to a departure from the construction illustrated in Fig. 3 of the patent.

I am confirmed in this view by the fact that the application for this patent and the application for the Wolhaupter patent now under consideration were pending in the Patent Office at the same time and both patents were issued, one for a rail-joint and the other for a tie-plate.

1044 I am therefore of the opinion, for the reasons heretofore expressed, that this Anderson patent does not anticipate the

tie-plate shown, described and claimed in claims 7 and 9 of the Wolhaupter patent in suit, No. 721,644.

Before concluding consideration of the prior art patents, I desire to call attention to the following letters-patent which show grooves or depressions running across the face of the plate at right angles to the length of the rail.

No. 469,386, February 23, 1892, Dunham;
574,773, January 5, 1897, Avery;
631,039, August 15, 1899, Goldie;
610,179, September 6, 1898, Goldie;
631,873, August 29, 1899, Kinney & Trueblood;
649,629, May 15, 1900, Charlton;
662,850, November 27, 1900, Avery;
691,317, January 14, 1902, Jones.

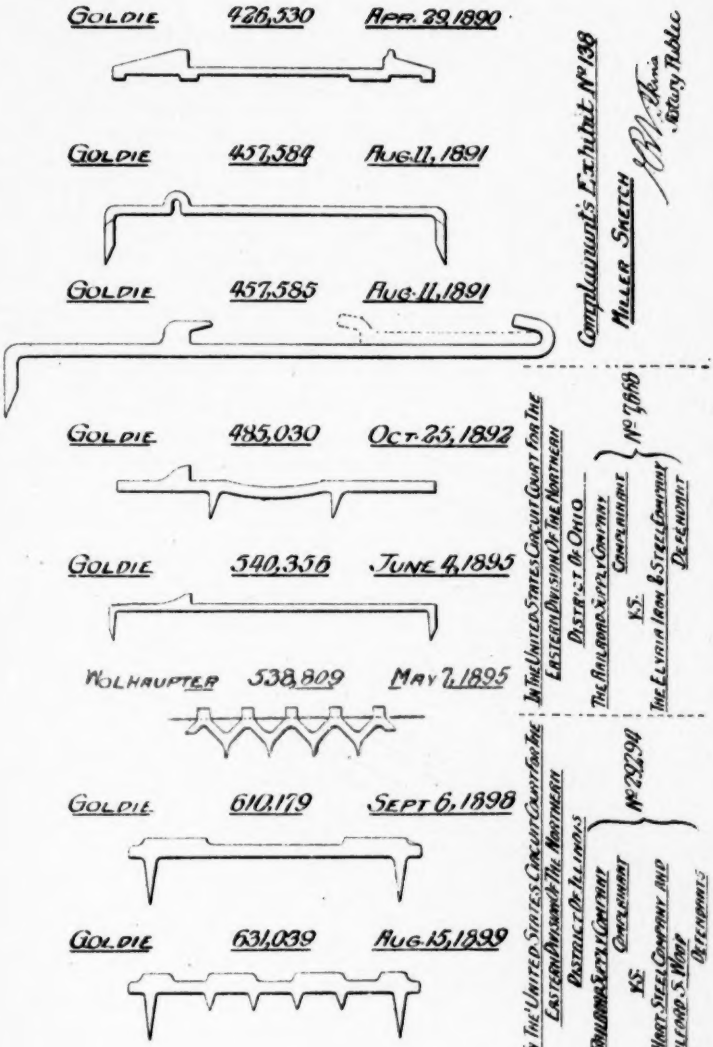
None of the devices illustrated and shown in the foregoing patents enumerated would perform the function of the Wolhaupter patent now under consideration, No 721,644, for the apparent reason that the grooves on the face of the plate are not transverse grooves but are at right angles to the length of the rail. In the first place the grooves are not covered by the rail and protected from the weather as in the Wolhaupter tie-plate. In the second place, the suction of the passing train being in the line of the rail or transverse the plate, this force could not be utilized where the grooves were at right angles to the rail as they could in the Wolhaupter tie-plate under consideration where the grooves are transverse the plate and in line with the length of the rail.

Another patent in which the grooves on the upper face of the plate are at right angles to the length of the rail, which I
1045 have omitted from the former list, is No. 684,466, issued to Sellers, October 15, 1901, and what I have said of the other similar devices is equally applicable to this.

I do not believe that there is anything shown in the prior patented art which serves to suggest this principle present in both of the claims of the Wolhaupter patent in suit, No. 721,644, to-wit, the placing of a series of transverse grooves or channels on the upper face of a tie-plate and in line with the length of the rail so as to employ the principle and to utilize the force of the suction of the passing train to clear the plate of sand and dust and at the same time to cover the grooves by the rail so as to protect them from the elements and brine which may drop from the passing cars.

Surely the earlier Wells patent, No. 203,570, of May 14, 1878, was not suggestive for the reason that 25 years intervened between its date and the date of the Wolhaupter patent in suit, No. 721,644, and the same might be said of the earlier Gould patent No. 280,030, issued June 26, 1883, where twenty years intervened between its date and the date of the Wolhaupter patent now under consideration No. 721,644.

And again I am sure that it took the Wolhaupter patent No. 721,644, now under consideration, to suggest such a possibility to defendant's expert.


GOLDIE 426,530 APR. 29, 1890
GOLDIE 457,584 AUG. 11, 1891
GOLDIE 457,585 AUG. 11, 1891
GOLDIE 485,030 OCT. 25, 1892
GOLDIE 540,356 JUNE 4, 1895
WOLHAUPTER 538,809 MAY 7, 1895
GOLDIE 610,179 SEPT 6, 1898
GOLDIE 631,039 AUG. 15, 1899
Complainant's Exhibit No 138
MILLER SKETCH
Notary Public
IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO
THE RAILROAD SUPPLY COMPANY COMPLAINANT
VS.
THE ELYRIA IRON & STEEL COMPANY DEFENDANT
No 7,868
IN THE UNITED STATES CIRCUIT COURT FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF ILLINOIS
THE RAILROAD SUPPLY COMPANY COMPLAINANT
VS.
THE HART STEEL COMPANY AND GUILFORD S. WOOD DEFENDANTS
No 29,294

Résumé.

Briefly stated, I am unable to discover anywhere in the art set up in this case and applicable to the patent under consideration a railway tie-plate which embodies or serves to suggest the principle present in both of claims 7 and 9 of placing a series of transverse grooves or channels on the upper face of the tie-plate and in line with the length of the rail so as to employ the principle and to utilize the force of the suction of the passing train to clear the plate of
1046 sand and dust and at the same time to cover the grooves by the rail so as to protect them from the elements and brine which may drop from the passing cars, nor do I find a tie-plate employing said principle and having upon one margin thereof a transverse rail abutting shoulder to receive the lateral thrust of the rail, nor do I find in the prior patented art set up in this case applicable to the patent under consideration, No. 721,644, anything to indicate or suggest that any of said numerous patentees had any conception of the employment of the principle and purposes of construction shown, described and claimed in claims 7 and 9 of the Wolhaupter patent under consideration No. 721,644.

In conclusion, I am therefore of the opinion that there is nothing in the prior patented art to anticipate, limit, restrict or qualify claims 7 and 9 of letters-patent No. 721,644 issued to Mr. Wolhaupter, February 24, 1903.

Col. Brown: The drawing submitted by the witness showing the section of the several Goldie patents is here introduced in evidence as an exhibit and identified with his record as follows: "Complainan's Exhibit No. 138, Miller Sketch, G. R. Wilkins, Notary Public, 6-23-1910."

Mr. Reed: Objected to as incompetent, irrelevant and immaterial.

(Here follows diagram marked pages 1047 and 1048.)

Q. 7. Please look at the blue-prints which I now show you that have been offered in evidence by the defendant and are marked, respectively, CC, DD, EE, FF and GG, and state whether or not either of these exhibits illustrate a tie-plate having any feature of the invention set forth in any of the claims in issue of either of the three Wolhaupter patents in suit.

A. None of the exhibits just handed me and involved in your question anticipate, modify, restrict or limit any of the claims
1049 of the three Wolhaupter patents in suit. Claim 8 of the Wolhaupter patent No. 538,809 calls for a series of flanges on the upper side of the plate on which the rail rests.

Claims 1, 2 and 3 of Wolhaupter patent No. 691,332 call for flanges on the upper face of the plate on which the rail may rest, while

Claims 7 and 9 of Wolhaupter patent No. 721,644 each call for channels or grooves transverse the upper face of the plate,—

While each of the exhibits handed to me and involved in your question have smooth upper faces upon which the rail is intended to rest.

Q. 8. Please look at the blue-print introduced by the defendant as "Exhibit KKK" and state what the illustration represents and whether or not in your opinion either of them has any bearing by way of anticipation of either of the three Wolhaupter patents in suit.

A. The "Exhibit KKK" just handed me and inquired of in your question contains two drawings No. 634 and 635, both of which are sectional drawings and are evidently intended to illustrate the same device. The tie-plate therein illustrated consists of a smooth bottom or flat bottom metal plate provided upon its upper face and along opposite edges thereof with transverse flanges against which the flange of the rail abuts. In Fig. 635 there is shown a cavity cut out of the upper face of the plate, but there is nothing to indicate that this cavity extends from end to end of the plate and thus becomes a groove. On the contrary I should understand it to be simply a cavity cut out of the middle of the upper face of the plate for the purpose of lightening the weight.

Claim 8 of Wolhaupter patent No. 538,809 calls for devices more or less sharpened on the under side of the plate and a series of flanges on its upper side on which the rail rests.

1050 Claims 1, 2 and 3 of Wolhaupter patent No. 691,332 each call for flanges on the upper and lower faces of the plate while—

Claims 7 and 9 of Wolhaupter patent No. 721,644 call for transverse grooves or channels extending across the upper face of the plate.

None of these elements are present in either of the drawings shown on "Defendant's Exhibit KKK," and for that reason I am of the opinion that "Exhibit KKK" does not illustrate a device having any of the features of the invention set forth in any of the claims at issue in either of the three Wolhaupter patents in suit and that it therefore does not illustrate a device which in any way anticipates, modi-

ies, restricts or limits any of the claims of the three Wolhaupter patents in suit.

Q. 9. Please look at "Defendant's Exhibit BB," and state whether or not either of the figures shown thereon illustrate the tie-plate disclosing any of the features of invention of the Wolhaupter patents covered by either of the claims in issue in this case, and in giving your answer please state whether or not the sections marked, respectively, with the words "Danish, German and French" are correctly or accurately drawn.

A. From my knowledge as a draftsman I should say that the first drawing illustrated on "Exhibit BB" is an end view of a tie-plate having a rail in section thereon, while the second view is a plan view of the same plate and rail. The sketch marked "Danish" is manifestly a sectional view as is the sketch marked "German." The draftsman in each instance has neglected to put on the lines which would indicate that the plate, as well as the rail was in section, and I have therefore added to complainant's copy of "Defendant's Exhibit BB," the sectional lines omitted by the draftsman. The drawing marked "Belgium" is manifestly an end view of a
1051 tie-plate with a rail placed thereon, the rail being in section. The sketch marked "French" is of a tie-plate and is evidently of a cross-section through one of the points thereof where the fish-plates are bolted to the rail. The draftsman, however, has omitted the sectional lines and I have caused them to be added to complainant's copy of "Defendant's Exhibit BB."

All of these drawings show a tie-plate or the base-plate where a tie-plate is intended to be illustrated, with a smooth upper face with the exception of the Danish tie-plate which shows a cut out cavity in the center of the face of the plate to lighten the weight thereof, but there is nothing to indicate or suggest that this cavity extends from end to end of the plate.

Each of the drawings show a perfectly smooth under face to each of the plates.

As claim 8 of the Wolhaupter patent No. 538,809 calls for flanges projecting from the top and bottom of the plate and claims 1, 2 and 3 of the Wolhaupter patent No. 691,332 each call for projecting flanges on the top and bottom of the plate directly beneath each other and claims 7 and 9 of Wolhaupter patent No. 721,644, each call for transverse grooves across the upper face of the plate, I am for the reasons heretofore stated of the opinion that there is nothing shown or illustrated, or even suggested by the illustrations on "Defendant's Exhibit BB" to anticipate, modify, restrict or limit any of the claims of the three Wolhaupter patents in suits.

Col. Brown: Complainant's counsel here introduces in evidence as an exhibit, the copy of "Defendant's Exhibit BB" which has been corrected by and identified by the witness and the same is identified with this case as follows: "Complainant's Exhibit No. 139,
1052 Miller Corrected Blue-Print of Defendant's Exhibit BB, G. R. Wilkins, Notary Public, 6-23-1910."

Mr. Reed: Objected to as incompetent, irrelevant and immaterial.

Recess.

Q. 10. Please look at the blue-print taken from page 290 of Eisenbahm-Geleise 1891 introduced as "Defendant's Exhibit LLL" and state whether or not there is illustrated therein any suggestion of the invention of Benjamin Wolhaupter as covered by any of the claims in issue of the three Wolhaupter patents in suit; and in giving this answer you may, if you please, look at the aluminum models "Defendant's Exhibits O^{26} and O^{27}, and state also whether these aluminum models correctly represent the structures shown in the blue-print "Exhibit LLL."

Mr. Reed: Objected to as not proper rebuttal and as calling for an opinion without proper qualification or experience.

A. The blue-print just handed me marked "Defendant's Exhibit LLL" and inquired of in your answer contains two drawings of railway chairs, the upper drawing 661 being an end view and the lower drawing No. 662 being a cross-section drawing.

In the upper drawing 661 there are white dotted lines intended to indicate the configuration of a section in the rear of the end view shown and both these drawings are illustrative of railway chairs in which the rail is wedged and locked securely to the chair and the chair would saw and wear the tie as much as the rail itself would so wear the tie except for the fact that the area of contact with the tie is increased by the width of the bottom of the chair.

1053 In Fig. 661 the dotted lines now marked A A, indicate cavities in the face of the bottom of the chair. These cavities might be for two purposes, first, the lightening of the chair, or, second, for frictional purposes or contact with the face of the tie. In both drawings there is shown on the upper face of the chair a groove or depression of very slight depth, too slight to be of any value in the reduction of weight, and I am inclined to believe that the same was provided to overcome the difficulty which was early experienced in the rolling of rails of their bottom flanges being full in the center, and it is probable that this very slight depression was made to overcome that difficulty.

In any event there is nothing illustrated in these drawings which would suggest a tie-plate nor could these chairs be used as and for a tie-plate for the following reasons:

First. Their weight is such as to preclude their use on account of increase cost.

Second. In equipping a railroad all the chairs would have to be laid upon the ties the entire length of a rail before the rail could be placed on the chairs, the chairs would then have to be spiked down, the wooden wedges inserted in each chair and the expense of this operation would be great, and

Third. In event it was desired to replace a broken chair it would be necessary to remove the wedges from all the chairs for the entire length of the rail before a new chair could be inserted in its place and then the wedges would have to be replaced in all the chairs throughout the entire length of a rail.

I am therefore of the opinion, for the reasons expressed, that there is nothing shown in this "Defendant's Exhibit LLL" to suggest, an-

ticipate, limit or qualify any of the claims at issue in this case of the three Wolhaupter patents in suit.

1054 I have examined the models referred to in your question and in my judgment they are substantially correct embodiments of the railway chairs, the drawings for which are found in "Defendant's Exhibit LLL."

Mr. Reed: Objected to as not proper rebuttal and as calling for an opinion without proper qualification or experience.

Q. 11. Please look at the blue-print reproduction of the Railroad Gazette of June 6, 1890, marked "Defendant's Exhibit A A," and state whether or not the device therein illustrated has any bearing, if so, what, upon either of the issues in issue of the three Wolhaupter patents in suit?

Mr. Reed: Objected to as calling for opinions without proper qualification or experience, as not proper rebuttal evidence and as too vague and indefinite, and as incompetent.

A. The various drawings on "Defendant's Exhibit AA" are intended to illustrate the same device with slight modifications as to the plane of the plate and the locking mechanism for locking the rail to the plate. On the left-hand side of the "Exhibit AA" there is illustrated an end and a plan view of the same plate. The upper view is an end view and the dotted lines now marked with the letter A are intended to indicate the same cavity in the upper face of the plate indicated by the dotted lines marked with the letter A of the plan view.

In each instance illustrated the bottom of the plate is flat or smooth and in each instance the upper face of the plate, or that portion thereof upon which the rail rests is smooth with the exception of the slight cavity for lightening the weight shown in the figures on the left of the sheet.

Claim 8 of Wolhaupter patent in suit No. 538,809 calls for devices more or less sharpened on the under side of the plate

1055 and a series of flanges on its upper side on which the rail rests.

Claims 1, 2 and 3 of the Wolhaupter patent in suit No. 691,332 each call for flanges on the upper and lower face of the plate in line with each other while——

Claims 7 and 8 of Wolhaupter patent in suit No. 721,644 call for transverse grooves or channels extending across the upper face of the plate.

None of these elements are present in any of the drawings shown on "Defendant's Exhibit AA" and for that reason I am of the opinion that "Defendant's Exhibit AA" does not illustrate or suggest a device having any of the features of the invention set forth in any of the claims in issue in either of the three Wolhaupter patents in suit and that "Defendant's Exhibit AA" does not illustrate a device which in any way anticipates, modifies, restricts or limits any of the claims at issue of the three Wolhaupter patents in suit.

Mr. Reed: Objection to Q. 11 repeated.

And thereupon an adjournment was taken to Thursday, June 24, 1910, at 10 o'clock a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, June 24, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

Q. 12. Please look at the blue-print reproduction of the Railroad Gazette of September 30, 1887, marked "Defendant's Exhibit DDD," and state whether or not the device therein illustrated has any bearing, if so, what, upon either of the claims in issue of the three Wolhaupter patents in suit?

Mr. Reed: Same objection as to Q. 11.

1056 A. "Defendant's Exhibit DDD" is illustrative of several tie-plate devices adapted to be held in engagement with the tie by screws passing through apertures in the plate and engaging the tie.

Figure 3 shows a flat bottom plate with an inclined surface upon its upper face upon which the rail is intended to rest and projecting flanges on the sides thereof against which the rail is intended to abut.

Figure 4 illustrates a substantially flat bottom plate with a considerable projecting lug in the center of the bottom of the plate adapted to be seated in a recess cut out of the upper face of the tie. The upper face of the tie-plate, or that portion upon which the rail is intended to rest is smooth and there are projecting lugs or flanges on each side of the upper face of the plate against which the flange of the rail is intended to abut.

With this statement of the construction shown in Figs. 3 and 4 it must be apparent that there is nothing shown or suggested in Figs. 3 and 4 which in any way suggests, anticipates, modifies or limits any of the claims of the three Wolhaupter patents in suit, inasmuch as there is in each instance an absence of one or more of the essential elements of each of the claims at issue.

Figure 5 is a cross-sectional view of a tie-plate having apertures for screws to pass therethrough to fasten the plate to the tie. On the under side of the plate there are shown three flanges more or less sharpened adapted to penetrate the tie. The upper face of the tie-plate or that portion thereof upon which the rail is intended to rest is smooth though slightly inclined and on each side thereof there are projecting flanges for the rail to abut against.

Figure 6 is a plan view of the tie-plate shown in Fig. 5.

With this statement of the construction it must be manifest that there is nothing shown or suggested in Figs. 5 and 6 to an-
1057 ticipate, modify, limit or restrict any of the claims at issue of the several Wolhaupter patents in suit, inasmuch as there is manifestly an absence of either projecting flanges on the top of the plate for the rail to rest upon or transverse grooves on the face of the plate.

Figure 7 is a cross-sectional view of a tie-plate through that portion thereof where one of the apertures for the reception of the screws is shown.

At this point it might be well to note that Fig. 6 is not a plan view of Fig. 7 and has no connection therewith for the reason that in the plan view shown in Fig. 6 the apertures in the bottom of the plate for the screws to pass through are directly opposite each other or in line, while in Fig. 7 the apertures for the screws to pass through are not in line, and I am therefore of the opinion that the plan view shown in Fig. 6 is not intended to and has no relation whatever to Fig. 7.

The structure of the tie-plate shown in Fig. 7 is a tie-plate having on its under face three downwardly projecting flanges more or less sharpened intended to penetrate the tie. There are indicated apertures through the plate through which the screws are intended to pass (but not in line) and the upper face of the plate or that portion thereof upon which the rail is intended to rest is substantially smooth and slightly inclined, and there is a projecting lug at one side of the plate against which the rail flange is intended to abut and a washer at the other side against which the flange of the rail abuts. There are dotted lines indicated by letters *a* which indicate, from my knowledge as a draftsman, cavities in the face of the plate manifestly for the purpose of lightening the weight thereof. This drawing standing alone in its present form would not indicate, to the draftsman or mechanic, grooves passing transversely
1058 across the face of the plate for the reason that if grooves were intended to be indicated in a cross-section drawing like this, the dotted lines would be replaced by full heavy lines and the space intervening between said lines and the line indicating the bottom of the rail would be white. As a further confirmation of this view I will call attention to the dotted line marked *a* on the left of Fig. 7 where it is manifest that these cavities do not extend across the entire face of the plate, for that portion of the plate which surrounds the screw aperture is indicated as being solid and not cut out.

There is nothing, therefore, to my mind in this Fig. 7 which suggests, anticipates, limits or modifies any of the several claims at issue of the three Wolhaupter patents involved in this suit for the reason that there is an absence from the face of the plate of projecting flanges upon which the rail is intended to rest and of transverse grooves.

I am confirmed in my view of Fig. 7 by the answer of Mr. Carter, defendant's expert, to X Q. 14 of Mr. Carter's re-examination, in which he says:

"A pocket not extending clear across the plate would not properly be called a groove. Such a *pocket*, however, to answer your real inquiry would have *been properly indicated by the dotted lines* shown in Fig. 7" (italics are mine).

Again, Mr. Carter says in answer to X Q. 13 as follows:

"These dotted lines in connection with the statement of the text that they are grooves indicates to me as a mechanic that they are

intended, if provided, to extend clear across the plate. If they had been mere pockets or recesses not extending clear across the plate from margin to margin, some such term as pocket or recess, rather than the term groove, would have been the natural one for the mechanic to employ in describing them."

1059 Thus it seems that Mr. Carter has based his opinion that the dotted lines indicate grooves instead of cavities, not upon the drawing itself but upon the statements of the text in the article of the Railroad Gazette that they are grooves. He makes the mistake, however, of saying that the article was written by a mechanic, for there is nothing to indicate in the evidence or in the article itself that it was so written by a mechanic, for a mechanic, writing of Fig. 7, would not have used the word "grooves" but would have used the word "cavity" which the drawing manifestly indicates.

Not being satisfied with the interpretation of Fig. 7 given by Mr. Carter, I have procured a copy of the original article in German of which the article in the Railroad Gazette purports to be an interpretation or extract. I find that in the original article Fig. 7 of "Defendant's Exhibit DDD" is indicated as Fig. 9 and I have caused the text to be interpreted and translated by an eminent German scholar and I find that in the German text the word "Aussparungen" is used, which means a cavity, a saving up, to leave open, to leave a space open, and it is therefore apparent that Mr. Post who really was a mechanic and the author of the German article, used the word "cavity," while the editorial writer of the Railroad Gazette, who was not a mechanic, used the word "groove." A correct translation of that portion of the German article in question is as follows:

"Using a plate of sufficient thickness a certain amount, if not much, of the weight can be saved, by means of weight saving cavities (*a-a* Fig. 9). The Netherland State R. R. intends shortly to lay a certain number of these ribbed plates (Fig. 9)."

In view of the manifest indications of Fig. 7 of "Defendant's Exhibit DDD" and the reading thereof which would be given thereto by an experienced draftsman and mechanic, I do

1060 not believe, even in view of the use of the word "grooves" by the editorial writer in the Railroad Gazette, that they would suggest to the mind of the draftsman or mechanic anything other than weight saving cavities in view of the statement of the text writer that they were "apparently adopted to lighten the plate, being taken out at a point where the metal is not needed."

I am therefore of the opinion, for the reasons above expressed, that there is nothing in Figure 7 taken in conjunction with the text of the article in the Railroad Gazette to suggest the several elements of the several claims at issue of the three Wolhaupter patents in suit. There is nothing suggestive of the series of flanges projecting above the upper face of the plate for the rail to rest upon and there is likewise nothing suggestive of the use of transverse grooves across the upper face of the plate for the purpose of employing the suction incident to the passing train to clear the

rail of sand and dust or to cover the same by the rail to prevent water and brine falling upon the plate.

Mr. Reed: Same objection as to Q. 11.

Q. 13. Having now considered specifically each of the prior patents and publications set up by way of defense in this cause and referred to by defendant's expert, Mr. Carter, please state whether anything therein shown or contained would tend to modify or qualify in any way the answer you have given to Q. 4?

Mr. Reed: Same objection as to Q. 11.

A. Having as you say considered in detail the prior patented art as well as the publications set up by the defendants, I am still of the opinion that there is nothing in the prior patented art or in the publications of a date prior to letters-patent No. 538,809, issued to Mr. Wolhaupter, May 7, 1895, which shows a tie-plate provided on its upper side with a series of flanges upon which the
1061 rail is intended to rest and it therefore follows that I do not find anywhere of a date earlier than the date of the Wolhaupter Patent No. 538,809.

"8. A railway tie-plate formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie, and on its upper side with a series of flanges on which the rail rests, substantially as described."

Likewise I have been unable to find anything in the prior patented art or in the publications set up by the defendants prior to the date of letters-patent No. 691,332, issued to Mr. Wolhaupter, January 14, 1903, of a tie-plate provided with projecting flanges on the upper side of the plate upon which the rail is intended to rest and directly beneath said flanges tie engaging flanges, nor have I been able to find a tie-plate embodying such a construction provided with an additional flange or flanges extending above the plane of the rail sustaining flanges and adapted to receive the lateral thrust of the rail.

It therefore follows that I do not find anywhere of a date earlier than the date of the Wolhaupter patent No. 691,332.

"1. A railway tie-plate provided on its upper side with one or more flanges on which the rail may rest or by which it is directly sustained and on the under side with one or more tie-engaging flanges extending parallel with the upper flanges and directly beneath the latter, substantially as described.

"2. A railway tie-plate provided on its upper side with one or more flanges on which the rail may rest and by which it is directly sustained and on the under side with one or more tie-engaging flanges extending parallel with the upper flanges and directly beneath the latter and sharpened to permit them to readily enter the tie, substantially as described.

"3. A railway tie-plate provided on its upper side with one
1062 or more flanges on which the rail may rest, and by which it is directly sustained, on the under side with one or more sharpened tie-engaging flanges extending parallel with the upper flanges and directly beneath the latter, and on the upper side with

an additional flange or flanges extending above the plane of the rail-sustaining flanges and adapted to receive the lateral thrust of the rail, substantially as described."

Likewise, I have been unable to find anything in the prior patented art or in the publications set up by the defendant of a date prior to the date of letters-patent No. 721,644, issued to Mr. Wolhaupter, February 24, 1903, of a tie-plate provided with transverse grooves and a transverse rail abutting shoulder so constructed as to employ the principle and to utilize the force of the suction of the passing train to clear the plate of sand and dust and at the same time to cover the grooves by the rail so as to protect them from the elements and brine which may drop from passing cars, and it therefore follows that I do not find anywhere in the prior art of a date earlier than the date of the Wolhaupter patent No. 721,644—

"7. A tie-plate provided in its rail supporting surface with transverse grooves or channels, and at one margin of said supporting surface with a transverse rail abutting shoulder.

"9. A tie-plate provided in its rail supporting surface with transverse grooves or channels, reaching to the edge of the plate, and at one margin of said surface a transverse rail abutting shoulder."

In short I am of the opinion still that there is nothing in the prior patented or published art set up by the defendants to suggest, anticipate, restrict, modify or limit the claims at issue of the three Wolhaupter patents in suit.

Mr. Reed: Same objection as to Q. 11.

1063 Q. 14. Please examine defendant's tie-plate marked "Complainant's Exhibit No. 15, Defendant's Infringing Tie Plate" and state whether or not in your opinion, it represents a structure which embodies or substantially embodies the claims at issue of the three Wolhaupter patents in suit and in giving your opinion in relation thereto, you may give your reasons for any opinion you may express?

Mr. Reed: Same objection as to Q. 11.

A. I have examined the defendant's tie-plate and believe I fully understand its construction and organization and purpose.

In the first place it clearly embodies and shows a metal plate provided with spike-holes, projecting devices on the bottom more or less sharpened and flanges projecting above the face of the plate upon which the rail is intended to rest.

They are, in my opinion, there present for the same purposes and perform the same function as they do in the patent in suit, No. 538,809, and they clearly come within the language and terms of the eighth claim of said patent.

Defendant's tie-plate embodies and clearly shows a metal plate provided with projecting devices on the bottom of the plate parallel with and directly under flanges projecting above the upper plane of the plate to receive the rails, and a flange above the plane of the rail supporting flanges to receive the lateral thrust of the rail.

They are in my opinion there present for the same purposes and perform the same functions as they do in the patent in suit, No.

691,332, and they clearly come within the language and terms of the first, second and third claims of said patent.

Defendant's tie-plate embodies and clearly shows a metal plate provided with transverse grooves extending across the upper surface from edge to edge of the plate and a transverse flange extend-
1064 ing above the plane of the rail supporting flanges and across one margin of the plate.

They are in my opinion there present for the same purposes and perform the same functions as they do in the patent in suit, No. 721,644, and they clearly come within the language and terms of the seventh and ninth claims of said patent.

I am therefore of the opinion for the reasons above expressed that the defendant's tie-plate as exemplified in "Complainant's Exhibit No. 15, Defendant's Infringing Tie-Plate" embodies the invention set forth in each of the patents in suit and the several claims thereof at issue, and is an infringement thereof.

Mr. Reed: Same objection as to Q. 11.

Q. 15. You may state whether or not the invention of the three Wolhaupter patents in suit, as stated in the several claims thereof, in issue in this cause, are capable of conjoint use in a single tie-plate?

Mr. Reed: Same objection as to Q. 11.

A. I am of the opinion that the structures called for by the several claims in issue of the Wolhaupter patents in suit are not only capable of conjoint use in one and the same tie-plate, but I find them so used in defendant's tie-plate, marked "Complainant's Exhibit No. 15, Defendant's Infringing Tie-Plate."

Mr. Reed: Same objection as to Q. 11.

Recess.

Q. 16. What are the essential characteristics of a tie-plate and in this connection you may refer, if you so desire, to the answer to X Q. 66 and any other portions of the deposition of defendant's expert witness, Mr. Carter?

Mr. Reed: Same objection as to Q. 11.

1065 A. Primarily a tie-plate comprehends a thin metal plate of such configuration as to prevent buckling and adapted to be inserted between the rail and the tie and to be held in engagement therewith and so designed as to be capable of holding the rail against displacement and at the same time prevent the sawing or wearing of the tie by the action of the traffic passing over the rail.

As exemplified in the Wolhaupter patents in suit it consists of the following:

(*a*) A thin metal plate provided with spike holes.

(*b*) Projecting devices on the bottom more or less sharpened.

(*c*) Projecting flanges on the top of the plate upon which the rail rests.

(*d*) The projecting devices on the bottom parallel with and directly under the flanges on the top.

(*e*) Flanges above the plane of the rail supporting flanges to receive the lateral thrust of the rail.

(*f*) The flanges above the plane of the rail supporting flanges, extending transversely across one margin of the plate.

(*g*) Transverse grooves extending across the upper surface from edge to edge of the plate.

In explanation of these features I will say:

(*a*) A thin metal plate provided with spike holes.

Actual experience has shown that the sawing motion of the rail together with its lateral thrust actually grinds out that portion of the tie directly under the seat of the rail, the same being deeper on its outer edge, and that for the purpose of preserving the life of the tie and preventing the spreading of the rail, and to enable the maintenance of the high speed now prevalent, it is necessary to have placed under the rail a light metal plate. It is also desirable
1066 that this plate should be as light as possible and at the same time prevent buckling, for the reason that in the very large number of such plates required the matter of weight becomes an important factor in relation to the question of cost.

It is also desirable that said plate could be provided with spike holes for the reason that where the spikes penetrate or pass through the plate they perform the function of holding the plate securely to the tie, thus preventing its movement more or less upon the tie, and the plate performs the function of tying the spikes together, so that any lateral movement of the plate or rail is jointly resisted by all of the spikes.

(*b*) Projecting devices on the bottom more or less sharpened.

The providing of projecting devices on the bottom of the plate, more or less sharpened, is for the purpose of providing additional means for attaching the plate to the tie and it is desirable to have them more or less sharpened, that they may readily penetrate the tie by the weight of the traffic. They also perform the additional function of assisting in resisting lateral strain, and in thus attaching the plate to the tie they also, through the instrumentality of the spikes which pass through the plate, provide an additional means of resisting the lateral thrust of the rail upon the spikes and serve to distribute this resistance, force or power through the entire surface of the plate.

(*c*) Projecting flanges on the top of the plate upon which the rail rests.

The downward and lateral thrust of the rail is at three points of its flange, to-wit: the outer edges and the center portion. It is therefore, desirable to strengthen the plate at this point with the addition of as little weight as possible. These flanges perform the duel function of strengthening the tie-plate and furnishing bighting
1067 and bearing surfaces to those portions of the tie flange, upon which falls the greatest strain, but they also, and at the same time, prevent the grinding and wearing effect upon the plate to the effect that sand and dust incident to the traffic falls into and

is carried off by the grooves adjacent to the flanges. They also prevent the action of rust upon the plate due to water for the reason that it is also carried off by the grooves.

The projecting flanges being located in their relation to the plate at such points as to best resist the crushing and lateral strain have a tendency and do keep the projecting devices on the bottom of the plate in direct contact with the tie, and thus at the same time tend to enhance the resisting action of the plate and all the parts thereof against the lateral strain.

(*d*) The projecting devices on the bottom parallel with and directly under the flanges on the top.

As just above indicated it is desirable to have the projecting devices on the bottom of the plate, which are more or less sharpened, for the purpose of entering the tie, directly under the projecting flanges upon the top of the plate upon which the rail rests. This is manifestly for the reason that they are then in line with the crushing pressure and their resisting force is augmented by the pressure thus applied in line through the projecting flanges on the top of the plate and the projecting devices on the bottom of the plate. In addition, if they are thus located they strengthen the plate at the point of greatest strain and thus serve to not only hold the plate firmly to the rail, but to afford additional resistance against the lateral strain throughout the plate and all its parts.

(*e*) Flanges above the plane of the rail supporting flanges to receive the lateral thrust of the rail.

In the absence of flanges above the plane of the rail sup-
1068 porting flanges the lateral thrust must be resisted by the friction contact of the bottom of the rail on the plate and the neck of the spikes, the tendency being in time to cut out the neck of the spikes and thus permit of the lateral displacement of the rail, but if the plate is also provided with flanges above the plane of the rail supporting flanges which abut against the rail flanges and thus resist the lateral strain, the working or sawing of the throat of the spike is prevented and the lateral strain is resisted by means of these flanges, the spikes, the plate and the projecting flanges, top and bottom, thus the whole plate with all its parts comes into action in resisting this strain.

(*f*) The flanges above the plane of the rail supporting flanges extending transversely across one margin of the plate.

A transverse flange may be extended across said outer edge and perform the same function in relation to all the parts of the plate for the purpose of resisting the lateral strain without materially, if at all, increasing the weight of the plate and such a flange becomes important and desirable for the reason just above given.

(*g*) Transverse grooves extending across the upper surface from edge to edge of the plate.

It has been heretofore pointed out that grooves across the upper surface of the plate were desirable for two reasons:

They enable the sustaining metal to be applied at a point where its resistance would be more effective, to-wit: Where the crushing power is applied and at the same time permits of the lightening

of the plate by reducing the metal in the same at the points where the least resistance is required.

It is desirable to have said grooves transverse the upper surface of the plate and extending from edge to edge thereof to more
1069 effectively drain off the water and brine which may gather on the plate and at the same time to have said grooves covered and protected by the rail flange, which necessarily shields the grooves more or less, both from the water and brine. It is also desirable to have them so located for the reason that the suction of the passing train is transverse the plate, and thus its force is utilized in clearing the plate of the sand and dust which may come between the rail and the plate, the grooves providing a means for the ready passage thereof from the plate.

That these features are of recognized utility and desirability is shown by the testimony of defendant's witnesses.

Mr. Carter, defendant's expert, in answer to X Q. 66, says:

"A tie-plate is essentially a metal insert—a plate—slipped in between the rail and the tie to protect the tie from the wear of the rail and to distribute the pressure of the load on the rail over a wider surface of the tie so as to reduce the tendency to crush the fibres of wood. Desirably and in its more complete form the tie-plate will also assist in holding the track engaged by tying the spikes together and so utilizing the strength of both the inner and outer spikes in resisting the tendency of the rail to be pushed outward by the flanges of the wheel and by affording in some cases a shoulder for the rail to abut against."

Mr. Faulkner in answer to Q. 262 says:

"I believe they (ribs on the under surface parallel to the rail and crosswise of the tie) are an advantage in helping to hold the track engaged and preventing a lateral side thrust."

Mr. Story in answer to Q. 62, says:

"Mr. Faulkner suggested that he believed ribs at right angles to the tie would be a distinct advantage and I then went into a very careful investigation of the subject from that point of view and added these ribs at his suggestion and after reaching the con-
1070 clusion myself that they were necessary and would better the plate."

Mr. Story in answer to Q. 76, says:

"In the plate designed by me the function (of ribs upon the lower surface of the tie-plate parallel to the rail and transverse to the tie) is to prevent the spreading of the track and hold it engaged better than could be done without such ribs."

And it must be held to be a recognition of their utility and desirability in a tie-plate when they are all found present for the same purpose and performing the same function in defendant's tie-plate marked "Complainant's Exhibit No. 15, Defendant's Infringing Tie-Plate."

Mr. Reed: Same objection as to Q. 11.

Q. 17. What are the essential differences between a tie-plate and a rail joint?

Mr. Reed: Same objection as to Q. 11.

A. A rail joint is essentially a device for joining the two ends of abutting rails together, while a tie-plate is a device to be inserted between the rail and the tie, to resist the lateral thrust and the downward crushing and sawing of the rail incident to the movement of the traffic over the rail. A rail joint being joined to the rail becomes a part thereof and moves with and acts as and with the rail.

Mr. Reed: Same objection as to Q. 11.

Q. 18. Do you know of any instances where tie-plates are or have been in use in track under rail joints?

Mr. Reed: Same objection as to Q. 11.

A. I have seen rail joints in use upon tracks both with and without tie-plates inserted between the rail joints and the tie.

Where rail joints were used without tie-plates I have observed that they wore and crushed the tie to the same extent that
1071 the rail so wears and crushes the tie and that that portion of the tie directly under the rail joint was ground out, being deeper on its outer edge, while where a tie-plate was inserted between the rail joint and the tie the surface of the tie, or the upper face thereof, under the tie-plate was not worn and the alignment of the rail was preserved.

As illustrating the wearing effect of rail joints upon ties when tie-plates are not used, I produce a series of four photographs which I am advised were taken at the Lynn station, Massachusetts of the Boston & Maine Railway, and one taken at the Lowell station, Massachusetts, of the Boston & Maine Railway.

As a further illustration of this wearing effect of the tie-plate upon the rail I would refer to "Complainant's Exhibit No. 129, Cogswell Inspection Photograph, C. R. I. & P. Tracks, Chicago."

As illustrating the effect where the rail joint has interposed between it and the *tie a* tie-plate, I would refer to "Complainant's Exhibit No. 106, Photograph Chicago Terminal Road Track near Harvard, Illinois," and "Complainant's Exhibit No. 118, Cogswell Inspection Photograph, Chicago Terminal Transfer Tracks."

Col. Brown: Complainant's counsel requests that the five photographs referred to by the witness as having been taken on the Boston & Maine Railroad be marked by the notary for identification.

Mr. Reed: Same objection as to Q. 11.

Q. 19. From your examination of the prior patents set up by the defendant, state whether or not you find anything therein illustrated or described or suggestive of the invention of either of the claims of either of the three Wolhaupter patents here in suit?

Mr. Reed: Same objection as to Q. 11.

A. I have heretofore said in considering the prior patented
1072 and published art applicable to each of the patents in suit that I have nowhere found prior to the date of said patents

anything illustrative, descriptive or suggestive of the invention shown, described and claimed in the claims in issue of the respective Wolhaupter patents here in suit.

I again repeat that there is nothing in the prior patented or published art prior to the dates of said several Wolhaupter patents illustrative, descriptive, or suggestive of the invention shown and described in the claims at issue of the three Wolhaupter patents here in suit.

Mr. Reed: Same objection as to Q. 11.

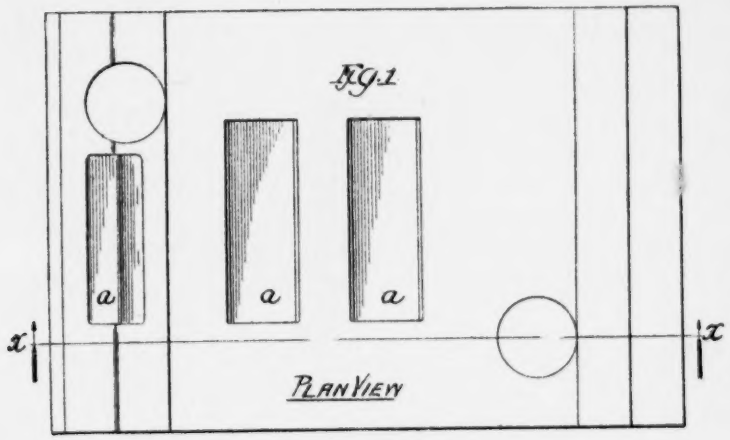
Q. 20. State whether or not in your opinion it required merely the exercise of mechanical skill and judgment for Mr. Wolhaupter to produce the tie-plate illustrated in his three patents here in suit as covered by the several claims thereof in issue?

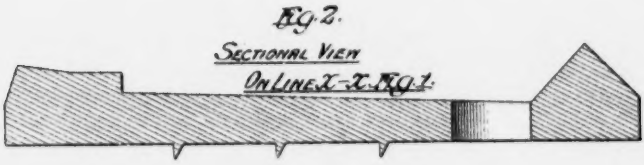
Mr. Reed: Same objection as to Q. 11.

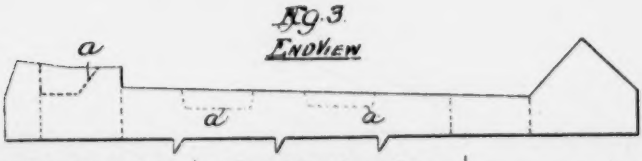
A. Having heretofore pointed out in considering the prior patented and published art applicable to and of a date earlier than the Wolhaupter patent No. 538,809, that there was not shown a tie-plate having a series of flanges projecting above the face of the plate for the rail to rest upon, I am of the opinion that it required inventive genius to produce the tie-plate shown, described and claimed in the eighth claim of said patent No. 538,809. Certainly Mr. Wolhaupter did not merely exercise mechanical skill and judgment for there was nothing in the prior art to suggest such a tie-plate.

Having previously pointed out in consideration of the prior patented and published art applicable to and at a date earlier than the Wolhaupter patent No. 691,332, that there was nowhere shown a tie-plate in which the projecting flanges on the top and bottom of the plate were directly underneath each other or parallel,
1073 I am of the opinion that it required inventive genius on the part of Mr. Wolhaupter to produce the tie-plate shown, described and claimed in the first, second and third claims of said patent No. 691,332. Certainly Mr. Wolhaupter did not merely exercise mechanical skill and judgment for there was nothing in the prior art to suggest such a tie-plate or to guide him in its production.

Likewise having heretofore pointed out in the consideration of the prior patented and published art applicable to and of a date earlier than the Wolhaupter patent No. 721,644, that there was not shown a tie-plate provided on its rail supporting surface with transverse grooves or channels extending from edge to edge thereof to employ the principle and to utilize the suction of the passing train to clear the plate of sand and dust and at the same time use the rail to protect the grooves from rain and the brine which might fall thereon from the passing train, I am of the opinion that it required inventive genius to produce the tie-plate shown, described and claimed in the seventh and ninth claims of said patent No. 721,644. Certainly, Mr. Wolhaupter did not merely exercise mechanical skill







In The United States Circuit Court
For The Eastern Division Of The
Northern District Of Illinois

The Railroad Supply Company
Complainant
V.S.
The Hart Steel Company
and
Guilford S. Wood
Defendants

No. 22294

In The United States Circuit Court
For The Eastern Division Of The
Northern District Of Ohio

The Railroad Supply Company
Complainant
V.S.
The Elyria Iron & Steel Company
Defendant

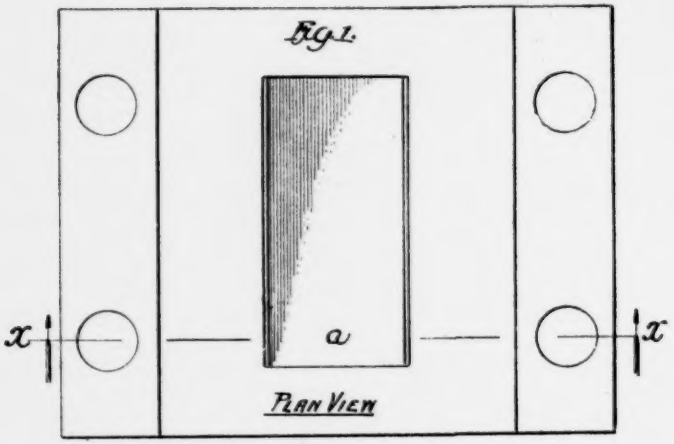
No. 7,668

Complainant's Exhibit No. 140
Miller Sketch
In Correction Of
Defendants Exhibit D.D.D.

[signature]
Notary Public

6-25-1910

Fig. 1.



Plan View

Fig. 2.

Sectional View
On Line x-x. Fig. 1.

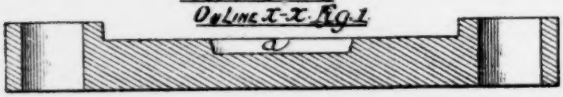
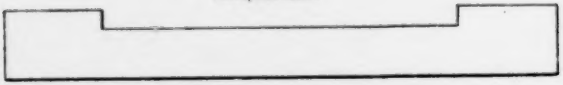


Fig. 3.

End View



In The United States Circuit Court
For The Eastern Division Of The
Northern District Of Illinois

The Railroad Supply Company
Complainant
vs
The Hart Steel Company
And
Guilford S. Wood
Defendants

No. 29294

In The United States Circuit Court
For The Eastern Division Of The
Northern District Of Ohio

The Railroad Supply Company
Complainant
vs
The Elyria Iron & Steel Company
Defendant

No. 7668

Complainant's Exhibit No. 141

Miller Sketch

In Correction Of
Defendant's Exhibit K.K.K.

[signature]
Notary Public

6-25-1910

and judgment because there was nothing in the prior art to suggest such a tie-plate or to guide him in its production.

Mr. Reed: Same objection as to Q. 11.

And thereupon an adjournment was taken to Saturday, June 25, 1910, at 10 o'clock a. m.

G. R. WILKINS,
Notary Public.

1074 CHICAGO, ILLINOIS, June 25, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

Q. 21. Why have you drawn a horizontal line on the illustration of the Wolhaupter plate?

Mr. Reed: Same objection as to Q. 11.

A. The horizontal line on the illustration of the Wolhaupter plate referred to in your question is to represent the location or line of the base of the rail flange.

This line is for the further purpose of emphasizing the fact that the device shown, described and claimed in the eighth claim of the Wolhaupter patent No. 538,809 is provided with a series of flanges projecting above the upper face of the plate upon which flanges the rail rests. A total absence of any such projecting flanges upon which the rail is intended to rest will be noted in the five preceding Goldie devices illustrated on "Complainant's Exhibit No. 138" and not until after the Wolhaupter patent No. 538,809 are there any such flanges shown in the two following Goldie devices illustrated on same exhibit.

In short this "Complainant's Exhibit No. 138" was prepared for the purpose of demonstrating that Mr. Goldie had no conception of the use of a series of flanges projecting above the upper plane of the plate and intended to support the rail until a date after the issuance of the Wolhaupter patent No. 538,809.

Mr. Reed: Same objection as to Q. 11.

(Here follow diagrams marked pages 1075 to 10078.)

Q. 22. You have stated your understanding of the structure shown in "Defendant's Exhibit Blue-Prints DDD and KKK, particularly with respect to Fig. 635 of "Exhibit KKK," and the modification shown in Fig. 7 of "Exhibit DDD." Please state whether or not these illustrations in and by themselves are easily readable by
1079 the layman, that is, one not particularly familiar with drawings, and if not will you kindly prepare two drawings amplifying these constructions and illustrations showing your understanding and reading of the drawings?

Mr. Reed: Same objection as to Q. 11.

A. The figures referred to in the question would not of themselves be readily understood by one who had not had experience either in drafting or reading drawings. Having had experience in both reading drawings and in making drawings I here produce two drawings, one which exemplifies my reading and understanding of Fig. 635 shown on "Defendant's Exhibit KKK" and one showing my reading and understanding of Fig. 7 shown on "Defendant's Exhibit DDD."

Mr. Reed: Same objection as to Q. 11.

Col. Brown: The two drawings produced by the witness are here offered in evidence as exhibits on behalf of the complainant, the one referring to "Defendant's Exhibit DDD," being identified as "Complainant's Exhibit No. 140, Miller Sketch in Correction of Defendant's Exhibit DDD," and the one referring to "Defendant's Exhibit KKK" being identified as "Complainant's Exhibit No. 141, Miller Sketch in Correction of Defendant's Exhibit KKK," G. R. Wilkins, Notary Public, 6/25/1910.

Mr. Reed: Same objection as to Q. 11.

Q. 23. Please look also at the defendant's aluminum model "Exhibit No. O^{25}," and state whether or not in your opinion this exhibit correctly represents the structure illustrated in Fig. 635 of "Defendant's Blue-Print, Exhibit KKK?

Mr. Reed: Same objection as to Q. 11.

A. For the reasons heretofore pointed out I am of the
1080 opinion that the model referred to in the question, to-wit, "Defendant's Exhibit O^{25}," does not correctly illustrate said Fig. 635 of "Defendant's Blue-Print, Exhibit KKK," and I have caused to be made and here produce a model which in my opinion does correctly illustrate a tie-plate of which Fig. 635 on "Defendant's Exhibit KKK" is but a cross-section. The model which I produce of course omitting the screw fastenings and the washer clamps.

Mr. Reed: Same objection as to Q. 11.

Col. Brown: The model produced by the witness is here offered in evidence as an exhibit and marked "Complainant's Exhibit No. 142, Miller Model in Correction of Defendant's Model Exhibit O^{25}

Exemplifying Fig. 635 of Defendant's Exhibit KKK," G. R. Wilkins, Notary, 6/25/1910.

Mr. Reed: Same objection as to Q. 11.

Q. 24. Please look also at the "Defendant's Aluminum Model Exhibit O^{24}" and state whether or not in your opinion this exhibit correctly represents the structure illustrated in Fig. 7 of "Defendant's Blue-Print Exhibit DDD"?

Mr. Reed: Same objection as to Q. 11.

A. For the reasons heretofore pointed out I am of the opinion that the model referred to in the question, to-wit, "Defendant's Exhibit O^{24}," does not correctly illustrate said Fig. 7 of "Defendant's Blue-Print Exhibit DDD," and I have caused to be made and here produce a model which in my opinion does correctly illustrate a tie-plate exemplified in Fig. 7 of "Defendant's Exhibit DDD," the model which I produce of course omitting the screw fastenings and the washer shown in the defendant's blue print DDD under the right-hand screw-fastening.

Mr. Reed: Same objection as to Q. 11.

1081 Col. Brown: The model produced by the witness is here offered in evidence as an exhibit and marked "Complainant's Exhibit No. 143, Miller Model in Correction of Defendant's Exhibit O^{24} Exemplifying Fig. 7 of Defendant's Exhibit DDD, G. R. Wilkins, Notary Public, 6/25/1910."

Mr. Reed: Same objection as to Q. 11.

And thereupon an adjournment was taken to Monday, June 27, 1910, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, June 27, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

Direct examination of the witness, Miller, closed.

Cross-examination by Mr. Reed:

X Q. 25. Did you ever work in a rolling mill?
A. No, sir.
X Q. 26. Did you ever manufacture a tie-plate?
A. No, sir, although I have seen them manufactured.
X Q. 27. Where did you see them manufactured?
A. At Joliet, Illinois.
X Q. 28. When?
A. February, 1910.
X Q. 29. That was for the purpose of qualifying you to testify in this case was it?
A. I presume so.

X Q. 30. Did you ever sell a tie-plate?

A. No, sir.

X Q. 31. When did you see tie-plates installed in railroads, I mean, being installed?

A. I never have so seen them.

X Q. 32. When, for the first time, did you notice tie-plates
1082 in railroads, particularly, and for the purpose of ascertaining their functions and mode of operation?

A. About a year ago last May.

X Q. 33. And where was that?

A. It would be impossible for me to give you the exact dates, but since a year ago last May I have taken occasion to observe the road-beds of such railroads as I have traveled over and come in contact with.

X Q. 34. That is while you were traveling since May, 1909, you would look at the road-beds and notice whether or not tie-plates were in use?

A. Yes, and also while at stations and in yards en route I have taken occasion to observe.

X Q. 35. And when you found tie-plates used you examined the plates, did you?

A. I looked both at the plates where they were in use and the tie and also looked at the effect of the rail upon the tie where tie-plates were not used. My interest in making these observations being entirely due to my retention in this case.

X Q. 36. Prior to the time of your retainer in this case you were entirely ignorant on the subject of tie-plates?

A. I can't say that that was true. I however had made no study or observation of them. I knew in a general way of their use, as I also knew of fish-plates and rail joints and rails and ties.

X Q. 37. You knew that these things existed as part of a railway track equipment but had made no study or investigation of any of them before your retainer in this suit?

A. The supposition of your question is correct.

X Q. 38. How extensive or minute was your tuition on the manufacture of tie-plates at the Joliet mill and what kind of a tie-plate or what kinds did you see made?

1083 A. I spent the entire afternoon at the mill under the guidance of the superintendent, most of the time in the rolling mill where they were rolling tie-plates identical with that shown in "Complainant's Exhibit No. 15, Defendant's Infringing Tie-Plate." Under the direction of the superintendent I was shown the entire process from the furnace through the steel mill, the production of the ingot, its reduction and the various processes of rolling until the completed tie-plate was finished, bundled, wired and loaded on the car.

X Q. 39. And the experience of that afternoon is the limit of your acquaintance with the manufacture of tie-plates?

A. It is.

X Q. 40. Have you ever made any experiments with tie-plates in their use?

A. No.

X Q. 41. In your observations of tie-plates as you have traveled did you keep any memoranda of what you saw?

A. I did not.

X Q. 42. In your observations during this period that you have directed your attention to railroads with a view of noticing tie-plates did you find tie-plates used at the majority of places that you looked at or did you find them absent?

A. I should think about equal.

X Q. 43. And what kind of tie-plates did you notice at the places that they were installed?

A. It would be impossible for me to answer that question for the reason that I kept no memorandum of them and was not familiar with the commercial names of the plates.

X Q. 44. Can't you tell us some of the kinds of plates that you saw installed?

1084 A. My recollection is that I saw perfectly flat plates and a form of "Complainant's Exhibit No. 67," and also "Complainant's Exhibit No. 68." The form shown in "Complainant's Exhibit No. 67" I observed in use at Joliet. This fact is impressed upon my mind by a discussion at the time as to what a really good condition we found such a light plate in after long years of wear.

X Q. 45. I do not care to have discussions and conversations included in your answers unless they are asked for and would like to have you confine yourself to what you saw. Referring to the perfectly flat plate, or flat plates do you mean that they were flat on both top and bottom?

A. Apparently so.

X Q. 46. And where did you see those flat plates?

A. I observed them on the Rock Island Road near Joliet.

X Q. 47. Did those plates last referred to have a shoulder or side flange on the top against which the rail flange abutted or rested?

A. They did not.

X Q. 48. On what road did you see the plates like "Complainant's Exhibits Nos. 67 and 68"?

A. I do not recall the name of the road but it was one of the roads that we crossed in walking from the depot at Joliet, the depot of the Chicago & Alton Road, to the place where we took the car to go to the mill.

X Q. 49. But you do not know the name of the road that you saw the plates like "Complainant's Exhibits Nos. 67 and 68" on?

A. No, sir, I do not.

X Q. 50. How extensive is this examination of the tie-plates that you saw on this pedestrian excursion?

A. My recollection is that it was within two hundred feet of both sides of the street.

1085 X Q. 51. Were all of the ties protected by tie-plates in this space examined?

A. No, sir.

X Q. 52. Well about how frequent were the tie-plates?

A. They were used on all of the tracks that I would regard as

main tracks, but were not always present on what appeared to be the sidings.

X Q. 53. Was the road thus inspected a double or single track road?

A. We crossed two railroad lines and there were two or more tracks and in one instance I think three, but I cannot say at this time whether the roads were single or double track.

X Q. 54. Well on the main line that contained the plates like "Exhibits Nos. 67 and 68" were the tie-plates continuous and on each tie within the space examined?

A. I am unable at this time to answer that definitely. My recollection is that they were pretty generally used, I made no notes or memoranda, not being expected to be called upon to testify upon these points.

X Q. 55. Were the tie-plates or any of them during this inspection taken up or out, or the rails raised or loosened, or did you simply inspect them as they were in track?

A. I simply inspected them as they were in track.

X Q. 56. What kind of ballast was employed on the track that contained the tie-plates?

A. I do not now recall.

X Q. 57. How long did the inspection continue?

A. Not to exceed a half hour.

X Q. 58. At what other place do you recall examining the tracks of railroads and either finding tie-plates or finding them
1086 absent?

A. At and adjacent to the depot of the Rock Island Railroad at Joliet, where I walked up the track for a considerable distance in company with Mr. Bell while awaiting the arrival of the train to return to Chicago.

X Q. 59. And it was there that you found the perfectly flat plate that you referred to?

A. I found very few of them, however, in the tracks, mostly on sidings, entirely on sidings.

X Q. 60. Was the main line single or double track at this point?

A. It was double track.

X Q. 61. Now in addition to these two points or places what other places have you observed where tie-plates were employed in railroad tracks?

A. I have observed them without minute inspection from the rear platform of a car on the Wabash System between Cleveland and Canton.

X Q. 62. On this occasion did you get off the car to inspect?

A. Did not inspect them at all, I said that in my previous answer.

X Q. 63. Well did you get off the car to look at the tie-plates or situation on this occasion?

A. I did not.

X Q. 64. Was the car running or at a standstill when you saw the tie-plates?

A. Running.

X Q. 65. What sort of a ballast was the road at this point?

A. Some of the road is rock ballast and some of it is gravel.

X Q. 66. What kind of tie-plates were installed on the Wabash at the points you noticed?

A. I cannot describe the tie-plate, my observation was merely casual and was directed more particularly to observing the
1087 status of the ties as I could see it from the train.

X Q. 67. Well at what other point or place or places have you directed your attention to tie-plates in track?

A. I don't at this time recall any other particular place.

X Q. 68. And you cannot recall having seen in track any other kind of plates than the three that you saw at Joliet?

A. Not with sufficient recollection to be able now to testify about.

X Q. 69. How long were you in the Canton Academy in the special course in machinery designing and mechanical drafting?

A. One year.

X Q. 70. Was there a machine shop connected with the institution?

A. There was not.

X Q. 71. Did you ever work in a machine shop?

A. I have not worked in a machine shop for wages. I have, however, as I have previously testified, been about machine shops in which my father was interested, and have assisted him more particularly in the assembling in the machine shop of experimental devices and been with him in the field while he was conducting experiments there. That was at Canton, Ohio.

X Q. 72. And with what institution was he connected at Canton, Ohio?

A. The C. Russell Company and subsequently the Peerless Reaper Company.

X Q. 73. Was that while you were in the Canton High School that you assisted your father?

A. Both while in the Canton High School and while in the Canton Academy.

1088 X Q. 74. And what was your age when you graduated from the *the* Academy?

A. Between 18 and 19.

X Q. 75. Then I understand that as soon as you had completed your course in the Canton Academy you entered the office of Mr. McKinley, and began the study of law?

A. Yes, sir.

X Q. 76. While you were with the Pennsylvania Company and Baltimore & Ohio Railway did you have any litigation or questions which involved the question of rail joints, tie-plates, or rail chairs?

A. Not that I now recall.

X Q. 77. While you were counsel for the Rolling Mills did you have any litigation or questions which involved tie-plates, rail joints or rail chairs?

A. No, sir.

X Q. 78. While you were with the Railroad Companies did you have any litigation or questions presented to you which involved the mechanical construction of railway tracks, or their maintenance?

A. Only such as were incident to the procuring of a survey and profile plans and the procuring of the right of way therefor for a new section of line for the Baltimore & Ohio Railway.

X Q. 79. But that involved simply the question of the location of the line and the securing of the grant for the pieces of land that were to be employed and did not involve the actual construction or building of the road?

A. I had nothing to do incident to the actual construction of the road.

X Q. 80. And while you were counsel for the rolling mill did you have any question that involved the construction or installation of the machinery?

A. No, although both in the case of the Canton Rolling
1089 Mill and the Denison Rolling Mill at Denison, Ohio, I was instrumental in organizing the companies and visited the plants while they were being constructed and the machinery was being installed. And I should further qualify my answer now with the statement that in connection with the Canton Rolling Mill I did have a very strenuously contested suit in which it was sought to enjoin the operation of the mill because of the pollution of an adjoining stream and this suit did involve somewhat the questions of the operation of the mill.

X Q. 81. But that suit did not involve the mechanical construction or method of operation of the rolls and appliances for producing the iron, did it?

A. Only to the extent that the water passing over the rolls and into the pits underneath the rolls carried with it necessarily oil which it was claimed obviously polluted the stream into which it was discharged.

X Q. 82. And the organization of the company simply involved the usual financial schedules and legal questions and did not concern the kind of machinery used, did it?

A. Only to the extent of procuring estimates of cost of installation of the complete plant.

X Q. 83. And in this organization you acted as counsel for the organizers and the company?

A. Yes, and also to a certain extent as promoter.

X Q. 84. And your practice as an attorney has included the practice as a corporation and general lawyer as well as a solicitor of patents and patent lawyer, I understand?

A. Yes, sir, it has. In some instances, however, I only acted as patent attorney and solicitor and did not do the general legal business of some of my clients.

X Q. 85. I understand that your conclusion is that after a thorough examination of the letters-patent introduced in evidence by the defendant and of the descriptions and drawings shown
1090 in the various publications introduced in evidence by the defendant and the various devices concerning the use of which defendant's witnesses have given testimony, so far as the same antedates the date of the applications in the three letters-patent which complainant has introduced as the basis of this suit, that there is

nothing contained in any of these letters-patent, publications, references or devices referred to in defendant's testimony which in any way anticipates, qualifies, or limits any one of the claims in complainant's letters-patent which are asserted to be infringed by the defendant's device, "Complainant's Exhibit No. 15." Am I correct in this understanding?

A. Your understanding of my conclusion is correct.

X Q. 86. And I further understand that it is your conclusion that the defendant's tie-plate shown by "Complainant's Exhibit No. 15," does embody the structure called for by the various claims in complainant's patents in issue both as those claims are written in the specifications and as they are in any way effected by the state of the art at the time of the applications for letters-patent of the complainant's patents, as shown by the evidence in this suit?

A. That is also correct.

X Q. 87. Do you regard railway joints, railway chairs and railway wear plates or tie-plates as in any way or to any extent similar or like devices, or do you regard them as entirely distinct and separate in their nature and functions?

A. Generally considered I regard railway joints and railway chairs as being entirely distinct in their organization and function from those of railway wear-plates and tie-plates.

In the case of railway chairs and railway joints they are in almost every instance which has been brought to my attention
1091 detachably attached to the rail and when so attached become a part of and move with the rail as it moves with the passing traffic, while in railway wear-plates and railway tie-plates they are intended to be inserted between the rail and the tie and have no devices for fixedly attaching them to the rail and perform the function of resisting wear on the tie produced by the rail incident to the passing traffic.

X Q. 88. A railway joint serves to keep the rails in place on the track, does it not?

A. Some of them do and some of them do not. Those which are used intermediate the ties do not except as they stiffen the rails at their abutting ends.

X Q. 89. But there are railroad joints which in addition to joining the ends of the rails and securing rigidity where the rails come together, also engage with the tie and in that way prevent lateral movement on the part of the rail both as jointed and as separate, is not that correct?

A. Yes.

X Q. 90. And that function of preventing lateral movement of the rails by the engagement of the joint piece with the tie is illustrated by the drawings and specifications of the patent to J. E. Wootten No. 66,437, dated July 2, 1867, is it not?

A. It is, but as I have previously explained in considering this Wootten patent No. 66,437, it could not be used as a tie-plate per se.

X Q. 91. This Wootten device exhibits a bottom plate upon which the rail rests and which at its two extremities rests upon the ties between which the rail joint occurs, does it not?

A. Yes, and the beveled ends of the depending rib *b* which forms a girder on the under side of the plate are seated in grooves or notches cut out of the tie.

1092 X Q. 92. Any piece of metal which intervenes between the bottom of the rail and the top of the tie operates as a tie-plate or wear-plate does it not to a greater or less extent?

A. Yes, with the additional qualification that it is probably to a lesser extent, and provided also that it is not so attached to the rail as to move with the rail.

X Q. 93. This Wootten device also shows shoulders on the top against which the flange of the rail abuts on each side, the outer side flange or shoulder extending above and around the flange of the rail in a sort of a semi-clutch, does it not?

A. Yes and at the same time this clutch flange together with the bolt *f* serve to fixedly attach the rail to the plate so that the plate moves with the rail as the traffic passes over the rail.

X Q. 94. This same Wootten device also exhibits a projection from the lower surface which enters into the tie does it not? I mean enters into the tie at each extremity of the device?

A. Yes, this longitudinal projection on the under side of the plate marked B is there present as the patentee says in his specification to serve as a rigid girder to support the ends of the two rails and the ends of this girder are beveled and are adapted to be seated in excavations or grooves which have previously been cut out of the tie.

X Q. 95. So that the lower projection or rib by engaging the tie will prevent or tend to prevent lateral movement of the rail, is not that correct?

A. Yes, but it does not automatically engage the tie by being driven into it by the weight of the passing traffic, but the tie has to first be cut out or be prepared for the seating of the beveled ends therein.

1093 X Q. 96. I have not in any of these questions, intimated or called for any answer except in relation to certain construction and devices which by your answers you have admitted, why is it that you voluntarily add to each answer something entirely outside of the scope of the question and entirely argumentative in its nature and tending to show your opinion that the device is not adapted for use as a tie-plate? Why do you not if my statements or interrogations are correct and accurate answer them without these further explanations and arguments?

A. I have in answering each of your questions sought not to be only courteous but concise. I may, however, misconstrued your questions which I have heretofore understood to be in the line of inquiry as to what points of similarity and what points of dissimilarity there were between railway joints and railway tie-plates. If hereafter you will preface your question with the statement that leaving out of the question any points of dissimilarity and any question of the use of a railway joint as a tie-plate, I would find no difficulty in answering your questions directly.

X Q. 97. It seems to me that the questions are perfectly plain and called, as was intended, for answers as to whether or not certain

specified constructions and certain specified functions existed in this Wootten device without any regard as to whether they could be used as a tie-plate or not. What I was getting at was whether there were not certain definite and clear elements of construction which perform certain and clear functions in this device. With this understanding I will ask you whether or not the Wootten device does not exhibit a metallic plate intended to be placed between the rail bottom and the tie and upon which on its upper surface, the bottom of the rail rests and further side shoulders or flanges which serve to keep the rail in place, and further a flange or rib extending
1094 from the bottom of the rail bearing plate and engaging in the tie, and performing the function of keeping the rail from lateral movement. Are not all these elements present and do they not perform the functions indicated in my question?

A. Again I am called upon to point out that the Wootten device shown in letters-patent No. 66,437, is not intended to be placed between the rail bottom and tie, but is intended to be fixedly attached to the rail and to that extent intervenes between the rail bottom and the tie. With this correction I would answer yes to your question.

X Q. 98. In this Wootten device then we have clearly shown and described a metallic plate upon which the rail bottom rests, side shoulders against which the rail flanges abut on the upper surface, and a projection or rib from the under surface of the metallic plate engaging in the ties, is not that correct?

A. With the distinction which I have pointed out in answering your preceding question, it is substantially correct with the further distinction that in my opinion the flange called in the specification a rigid girder does not engage the tie in the ordinary accepted sense of engagement, but is intended to be seated in a previously prepared aperture in the tie and the sides of this rib or girder contact with the sides of the cavity to prevent lateral displacement.

X Q. 99. You keep saying with the "distinction." I do not care to have you make comparison and the question suggested no comparison whatever, or no distinction whatever, it simply asked whether certain structure did not exist and certain functions were not performed by the structure. Now does or does not the Wootten patent show a construction which includes a metallic plate upon the top of which the bottom of the rail rests, side flanges or
1095 shoulders on the top of this plate against which the flanges of the rail abut or impinge and a bottom projection or rib which engages in the tie?

A. If you want me to answer direct I should be compelled to say that such is not my reading of either the drawings or the specifications of the Wootten patent.

Recess.

X Q. 100. In what respect would you say that my question or assumption that the Wootten patent shows a construction which includes a metallic plate upon the top of which the bottom of the plate rests, side flanges or shoulders on the top of this plate against which

the flanges of the rail abut or impinge and a bottom projection or rib which engages in the tie or ties is incorrect? Is it not a fact that those features of construction appear in the specification and drawings of the Wootten patent?

A. No. These features which you have named are not in my opinion found in the Wootten patent for the following reasons: The rail does not rest in a broad sense upon the top of the metallic plate for the reason that it is securely fastened to it by means of the flanges referred to in your question and the fastening bolts *f*. The metallic plate however does intervene between the rail or that portion thereof which extends over the ties and the bottom projection or rib which the patentee defines to be a girder does not engage the tie in a broad sense but is seated in an aperture in the tie. I have tried to point out these distinctions several times and trust I have now made my understanding clear.

X Q. 101. Your idea is that if a beam or plate is placed upon an underlying support it cannot be said to rest on that support if it is fastened to it, I take it?

A. Not if it is so fastened as to become an integral part of what you call the support.

1096 X Q. 102. Is it your idea that in the Wootten patent construction the rail becomes an integral part of the device as soon as it is placed therein so that the flanges abut against the side flanges or shoulders and before the bolt fastening is attached?

A. No.

X Q. 103. Then until the bolt fastening was attached in the Wootten device the rail would be said to rest upon the top or top surface of the device, I mean when the rail was placed in the device so that the rail flanges abutted against the side flanges or shoulders as supposed in the last question?

A. Yes, because until the bolt fastening was employed the rail would have an independent movement of the chair incident to the passing of the traffic, restrained only by the flange *d*.

X Q. 104. But the moment the bolt was inserted and the nut screwed down so as to complete the fastening the rail could not be said to rest upon the top surface of the device?

A. No, I think not.

X Q. 105. And is it not a fact as you read the specifications and interpret the drawings of this patent that the effect of the application of the bolt fastening would be to bring the lower surface of the rail and the upper surface of the plate into closer contact and union than before applied?

A. It would bring them in fixed contact and union.

X Q. 106. The effect of the bolt fastening when applied being to bring the bottom of the rail and the top surface of the plate or device into more close and intimate contact and not operated in any way to remove or tend to remove the rail from this top surface, your idea is that the moment the bolt fastening is applied and completed the rail no longer can be said to rest upon the top surface of the device?

1097 A. The effect of the bolt fastening when applied is to bring the bottom of the rail and the top surface of the chair in such

fixed contact that the rail can no longer be said to rest upon the chair but rests on the tie, the chair becoming by this fixed contact as you call it an integral part of the rail.

X Q. 107. Your idea is that the moment the bolt fastening is inserted and tightened the device becomes such an integral part of the rail that it can be ignored as a substantial element and the rail be said to rest directly upon the tie?

A. No, it cannot be ignored as a substantial element because that is one of the substantial elements of a railway chair, that is, a device by which the abutting ends of rails are fixedly held in relation to each other and to the chair. My understanding is that when they are so held the whole device rests upon the ties if the chair is designed to be supported upon two or more ties. Of course where the chair is designed to be employed between and not supported upon the ties the abutting ends of the rails cannot even then be said to rest upon the chair.

X Q. 108. Then your idea is that the rail in this Wootten device may be said to rest upon the upper surface of the device or chair until the bolt fastening is applied and tightened and then because of the bolt fastening its application and tightening the rail can no longer be said to rest upon the upper surface of the device or chair.

A. Yes, that is my idea and understanding of the Wootten device.

X Q. 109. At what particular time or at what degree of clamping in screwing down the nut on the bolt fastening does the rail cease to rest upon the chair according to your conception?

1098 A. As I have already answered when the rail ceases to have a movement incident to the passing traffic independent of the chair.

X Q. 110. Then as long as the rail wiggles or moves in the slightest degree it rests upon the upper surface of the chair, but the moment it ceases to have any motion or movement independent of the chair the rail ceases to rest upon the upper surface of the chair?

A. The first part of your question was hardly fair and does not express my meaning. The latter part of your question is correct.

X Q. 111. Will you kindly give us your authority, mechanical, lexicographical, or philological for this position and distinction between resting and not resting?

A. My understanding of the word rest as I have used it in answer to your question is such an understanding of the word as I have always had and I cannot give you at this time the authority therefor off-hand without stopping to look it up. I will, however, endeavor to do so before the conclusion of this cross-examination.

X Q. 112. But your idea of the word rest excludes the idea of the resting object being secured to the support?

A. Yes, in such a way as to become part thereof and move therewith.

X Q. 113. So that Mr. Cooke as he now seats may be said to be resting on the chair, but if he were to arise and some one were to thoroughly annoint the chair with glue and he were to reseat himself and wait a few moments for the glue to set, he could not be said to be resting after the advent of the glue?

A. I don't think your view is quite the illustration I would use. Mr. Cooke is now resting on the chair because he has a movement independent of the chair. If however he was entirely tied up to the chair, or in some other way so securely attached thereto that
1099 he would have no movement independent of the chair I don't think he would be resting upon the chair.

X Q. 114. Suppose the Wootten device were cut up into eight-inch pieces by transverse cuts and the bolt fastening omitted, disregarding the end sections which are beveled, what is to prevent the use of one of these supposed sections being seated in a tie, a rail placed therein and it being used as a tie-plate?

Col. Brown: Question is objected to as calling for the consideration of a hypothetical structure not shown to be part of the prior art; not shown to be disclosed in or by the Wootten patent referred to in the question and not shown to have been conceived or used by any person prior to the date of the Wolhaupter patents in suit. If the counsel will produce a drawing of the exact structure he has in mind showing how he would redesign the Wootten patent so that it might possibly be used as a tie-plate and have the drawing in such form that the court will understand it, then no objection will be made to the question.

A. If you mean such an eight-inch section was to be taken from a portion of the chair intermediate the ties and representing in end view substantially that form shown in Fig. 4 of the Wootten patent, it could be used as a tie-plate, but in my opinion and from my reading of the testimony in this case of practical railroad men this reconstruction of the Wootten chair would not make a practical tie-plate. Manifestly, for the reason that it has no spike apertures and the depending portion of the girder *p* is of such a length that the tie would have to be cut such a depth that it would ultimately split and break the tie instead of tending to preserve it.

X Q. 115. The modification necessary in your judgment to form a practical tie-plate from this supposed section of the Wootten
1100 device or chair would be a shortening and possibly the sharpening of the under projecting rib or girder and the additional spike holes?

Col. Brown: Last objection repeated.

A. The modifications necessary in my judgment to form a practical tie-plate from this section of the Wootten device or chair set forth in your question X Q. 114 would be as follows: First, to shorten and sharpen the under projecting girder so that it would be adapted to engage the tie by the weight of the traffic passing over the plate and to so extend the width of the structure as to permit of the insertion of spike apertures on both sides. This reconstruction would be in my opinion such a radical reconstruction and rearrangement of the parts as to be a departure from anything set forth or capable of being understood from the Wootten patent No. 66,437.

X Q. 116. But it is your opinion, I understand, that such a sec-

tion as has been supposed with the proportions of the shoulders, top surface and lower projection, ridge or girder as they are shown in the patent and especially in Fig. 4, could be seated in a tie and used as a tie-plate?

A. Yes, but as previously pointed out would not be a practical device for the following reasons, first, the projecting girder *b* is of such a length of size that it would have to be countersunk into the tie and would require the additional expense of the labor incident to cutting out of the tie. Second, if the tie were to be cut out on its face to the extent necessary to receive this girder it would necessarily weaken and shorten the life of the tie. Third, in equipping a new line with such a device it would be necessary to first cut out all the ties for the entire length of a rail, then to place all the devices on all the ties the entire length of the rail before the rail could be laid and, fourth, in the event it was desired to replace any one of these devices it would be necessary to lift the entire rail
1101 for the length of the projecting girder would be such as to prevent its being slipped under the rail.

X Q. 117. Is it your idea that a tie-plate which does not show spike holes and which cannot be, as to its lower projections, embedded in the tie without being seated specially and before the tie is in track, is not practical?

A. My idea is that a tie-plate is not practical which does not have spike apertures and which cannot engage the tie without having specially prepared apertures in the tie either placed there before or after the tie is laid on the road-bed, and I form this opinion as much from the testimony of the practical railway men who *has* testified for the defendant as well as those for the complainant.

X Q. 118. Is it your idea, Mr. Miller, that a tie-plate which has to be placed or seated in the tie before the rail is placed thereon, or to put it in other language, which cannot be properly seated or engaged in the tie by the weight of the rail and traffic is a practical or unpractical tie-plate?

A. I should say judging from the testimony of Mr. Faulkner, one of defendant's witnesses, as well as the testimony of other witnesses, such a tie-plate would be unpractical commercially.

X Q. 119. Then is it your idea that a tie-plate made of an eight-inch section of the Wootten device in proportions and with a structure shown in the patent specifications and drawings, would be unpractical or impractical commercially or in its operation, or both?

A. Both.

X Q. 120. And you have given your reasons in answer to the above questions for this conclusion, have you?

A. I have.

X Q. 121. And the principal objections which you would
1102 have to the actual use of such a tie-plate as supposed in your last question, would be the difficulty of installing it and renewing it and the tendency in your opinion that it would have to weaken the tie, as well as the lack of spike-holes?

A. Yes.

X Q. 122. Do you know the usual weight per yard of railroad

rails in this country in 1867 or the width of the lower flanges of such rails on ordinary railroad tracks at that date?

A I don't think I do definitely. My impression however is that the weight of the rail at that time was about 60 or 70 pounds. I don't recall the width of the flange at that time.

X Q. 123. Assuming that the width of the bottom of a 65-pound rail was four inches and taking Fig. 4 to show a 65-pound rail about how deep would the lower projecting ridge or flange be on the proportions shown in Fig. 4 as nearly as you can determine?

A. Judging from Fig. 4, I should say approximately slightly less than two inches.

X Q. 124. Do you know the dimensions of ties used at that date, especially their thickness?

A. I think from six to eight inches thickness.

X Q. 125. And do you know the usual width of ties at that time?

A. Across the face.

X Q. 126. Yes.

A. I should think about six inches, some of them probably slightly less.

X Q. 127. And in 1867 as a rule oak ties were used, were they not?

A. I cannot say as to that.

X Q. 128. Examining the Wootten patent drawing and specifications do you find any spike holes shown?

1103 A. Judging from the cross-sectional view, Fig. 2, which is described in the specification as being a transverse vertical section on the line 1—2 of Fig. 1, I find on the left-hand side a spike which evidently passes through the chair and enters the wood and I would therefore say that at the extreme ends of the chair and on one side thereof only there are provided spike-hole apertures.

X Q. 129. And in Fig. 1 there is at the right-hand end of the chair a spike-head indicated in the drawing, is there not, immediately above the letter D?

A. Yes, but that is still looking at the side of the chair which would be the left-hand side of the chair shown in Figure 2.

X Q. 130. But enough appears in the drawings of this patent to indicate that the inventor intended to have spike holes in the chair and spikes driven through them into the ties on one side at least?

A. Yes, but not on both sides.

X Q. 131. This Wootten device styled "Improved Railway Chair" is intended to be used as a railway coupling is it not, or a railway joint?

A. Yes.

X Q. 132. If an inventor or engineer or mechanic undertook in 1867 after the issue of the Wootten patent to devise a rail plate and the Wootten patent were before him, the drawings and specification of this patent would suggest a metallic plate underneath the rail with side shoulders or flanges against which the rail would abut and which would tend to hold the rail from lateral movement and an under projecting rib or flange engaging or seated in the tie and with spike-holes on one side of the plate, would it not?

A. I do not believe that it would and strange as it may seem no such tie-plate as you have described appears in the patented
1104 art until the Goldie patent No. 485,030, October 25, 1892, or some twenty-three years later.

X Q. 133. Well in your judgment what would the Wootten patent have suggested immediately after its issue to a mechanic or inventor who intended to get up a tie-plate?

A. In my judgment it would not have suggested any form of tie-plate.

X Q. 134. If in 1867 you had decided to invent a tie-plate, or get up a tie-plate and had had this Wootten patent before you, would it have suggested anything as to structure in a tie-plate?

A. As I was only nine years old at that time I don't think it would have suggested anything to me. But that manifestly isn't what your question comprehends.

X Q. 135. I of course was not aware at what time in life you obtained your present precocity and did not know whether or not you were an infant phenomenon but assuming your present attainment and experience in 1867 and assuming that you had intended to devise a tie-plate and had had the Wootten patent and specification submitted to you or placed before you, would you have had any suggestions, if so what, as to your tie-plate from the Wootten patent? When I say attainments and experience, I am going perhaps too far and should correct myself, by limiting your attainments and experience to the time just prior to when you began your investigation of the tie-plate subject, and the question may be considered with that limitation?

A. As in answer to your previous question I should say that there is nothing in either the drawings or the specifications to suggest a tie-plate, or which in my judgment could be of any aid to an inventor who was seeking to get up a tie-plate, for to use the lan-
guage of Mr. Carter in speaking of this Wootten device:
1105 "Its peculiarities make it special to the joining of rails as illustrated."

X Q. 136. Then your idea is that a person who has in view the construction of a tie-plate could get no information or suggestion as to the form or structure of that plate from the structure of the Wootten patent?

A. Yes.

X Q. 137. And why do you come to this conclusion because it is called a railway chair or railway coupling and the suggested use in the patent is the joining of rails?

A. Because of those facts and the additional fact that it has as I have tried to point out in answer to previous questions none of the features and performs none of the functions as a tie-plate when assembled and used as a rail chair.

X Q. 138. The top shoulders or flanges in the Wootten patent tend to prevent lateral movement of the rail, do they not and hold it in place?

A. No, when the chair is bolted to the rail, they tend to move with the rail.

X Q. 139. Then they don't perform any function at all?

A. They do, they perform the function and are part of the means by which the chair is locked to the rail.

X Q. 140. If the bolt were not inserted or were broken these shoulders or flanges would tend to prevent lateral movement of the rail, would they not?

A. If both nuts were broken or omitted and the railway spikes on the same side of the chair were not driven down so as to make a close contact with the rail, so that the rail could have a movement on the chair independent of the chair, then the shoulders or flanges would tend to resist lateral movement of the rail.

X Q. 141. You notice, do you not, that the specification
1106 speaks of one of these shoulders, the bent-over one, as a "retaining flange" and also states of the rails "when they are confined laterally between the bent flange *d* and rib *e*"?

A. Yes, I understand that, that means confined laterally or confined crosswise of the plate.

X Q. 142. And would not the insertion or seating of the lower projecting flange or girder in the tie tend to prevent lateral movement of the chair and rail when placed in the chair?

A. That is just the point I have been endeavoring to point out. The specification says that "so securely is the coupling confined to the two rails that it may be considered a part of the same." Therefore if we are to look in this completed device for resistance to lateral strain, we must look to the aperture in the tie in which the depending girder is seated for the completed chair when securely fastened to the rail may, as the inventor says, be considered a part of the same and move with the same.

X Q. 143. But in your judgment does not the seating of the under projecting ridge or girder in the tie tend to prevent lateral movement of the rail?

A. Assuredly so.

And thereupon an adjournment was taken to Tuesday, June 28, 1910, at 10:30 a. m.

(See note, p. 577.)

G. R. WILKINS,
Notary Public.

1107 CHICAGO, ILLINOIS, June 29, 1910.

Met pursuant to adjournment.

Present:

Col. Brown on behalf of complainant.

Frank F. Reed, Esq., and James Negley Cooke, Esq., on behalf of the defendant.

And thereupon the cross-examination of the witness, MAJOR MILLER, is resumed by Mr. Reed.

X Q. 144. The Wootten patent shows a device in which the rail bottom is on the top of a plate and on each side of the rail flange there is a shoulder or flange against which the rail flange abuts, is not that correct?

A. Yes.

X Q. 145. And as a part of the same piece of metal that has this surface on which the rail bottom is placed and which bears the shoulders or side flanges, there is a lower projection, flange or rib which is intended to and does enter into the tie or rather into an excavation in the tie?

A. Yes.

X Q. 146. And these three elements of the plate surface on which the rail bottom is placed, side shoulders or flanges upon which the rail flanges abut, and lower projection or flange are in the same piece of metal and each a part of the device?

A. Yes.

X Q. 147. And the entire device is intended and adapted for the purpose of an intermediate between the rail and the tie?

A. No. The device is intended and adapted for the purpose of joining the ends of abutting rails together and forming a suspension bridge or brace or girder between two ties. Only the
1108 extreme ends of the Wootten railway chair could be said to be intermediate between the rail and the tie.

X Q. 148 But by means of the spiking at each end and the placing of the lower rib in the ties at the ends of the device, the device does operate to connect the ties and rails, does it not?

A. With the limitations implied in your question, I should say yes.

X Q. 149. And to the extent that the horizontal portion of the device at the ends is between the rails and the ties, the device serves to protect the ties from the wear of the rails, does it not?

A. Only to a very limited extent, if at all, for the reasons that I have already pointed out that the chair being bolted to the rails becomes an integral part thereof, moves with the rail in its up and down or sawing or pounding motion and this is doubly true when the device is elongated so as to extend over two or more ties, because then we have a pounding effect or shock due to the car-wheels passing over the rail and producing a tipping or sawing motion, both when the wheels are passing over the chair at one end as well as at the other.

X Q. 150. If, however, the bolt which attaches the device to the rail were omitted, the device would then not be rigidly attached to the rail and the rail could be said to rest upon the flat upper surface of the device and the ends of the device on the ties would serve to their extent to protect the ties from the wearing action of the rails, would they not?

A. Yes, if the limitations that your question presumes the length of the chair is to cover the distance between two ties and to contact therewith. As I tried to point out in answer to your previous question where the device is of such length and contacts with two
1109 or more ties there is nevertheless a cutting, grinding or wearing force exerted upon the upper face of the ties due to the fact that two movements are imparted to the chair, first, that when the car wheels reach that point on the rails immediately above the first end of the chair illustrated by the dotted lines 1—2 of Fig. 1 of the Wootten drawings, a movement is imparted to the chair at

that point as well as to the other end of the chair due to a tipping motion or tendency, and, second, when the wheels reach a corresponding position on the rail above the other end of the chair a motion or movement is likewise imparted for the same reason to both ends of the chair.

X Q. 151. You mean, I take it, a vertical motion?

A. Yes.

X Q. 152. This would be true, I mean the vertical motion, theoretically of any plate that was placed under a rail and on top of the tie, would it not?

A. I think not, it would depend entirely upon and be limited by the size of the device and if it were limited to such a size as the tie-plate size, for example, I think it would be practically nill.

X Q. 155. But it is true, theoretically, is it not, that when a plate is intervened between a rail and tie and a load carried along the rail, the pressure due to this load exerts a downward force as soon as it reaches the near edge of the plate and tends to produce a vertical downward movement and this is true also as the load pressure leaves the far side of the plate?

A. Yes, as is shown in "Complainant's Exhibit No. 29, Illustrating the Wave Motion of Track," but in the size of the device such as is used in the tie-plates where they are securely engaged with the tie by projecting flanges and spikes penetrating spike apertures in the tie-plate, the movement of the tie-plate, independent of the tie itself, is not apparent in my judgment.

1110 X Q. 154. So that this objectionable downward movement at the edges of the plate due to the load pressure passing over it, does exist to a certain degree in all plates but it may be practically disregarded if the plates are retained of the width usual in tie-plates, say six or eight inches, and there are spikes and engaging flanges to counteract it?

A. I think that is correct.

X Q. 155. And I take it there is no doubt but that the Wootten device as it is shown when installed and both before and after the bolt is secured tends to keep the rails in place and prevent lateral or horizontal movement of the rails?

A. The only features about the Wootten device which tend to prevent this horizontal movement are the spikes. It must be obvious that the depending girder or that portion of it which is intended to be seated in the tie would not perform this function for the reason that necessarily the cavity cut out in the tie in which the girder is intended to be seated, must be slightly larger than the girder, otherwise the forcing of it into the cavity would have a tendency to split the tie, and if as I believe the cavity is thus larger than that portion of the girder which is intended to be seated therein, it would not have any frictional or other resisting force against the horizontal movement.

X Q. 156. But if the lower projecting rib or girder were placed in the aperture so as to be a tight fit or after being inserted were wedged so as to fit tightly then it would tend to prevent lateral or horizontal movement of the rails, would it not?

A. Yes, but I don't believe that that is the construction or use intended by the Wootten device.

X Q. 157. Is there anything in the specifications or drawings of the Wootten patent showing that the lower flange or girder is loosely inserted in the tie cavity?

1111 A. Yes, there is. The inventor says in the specification, speaking of the ties or sleepers:

"And these are so cut away as to *admit* the beveled ends of the rib *b*."

The inventor also says in the statement of his invention that:

"My invention consists of a rail coupling composed of a rolled bar with retaining flange and certain ribs, the whole being supported at its opposite ends on two sleepers, and being constructed for the retention, support, and *ready removal* and replacing of the rails, substantially as described hereafter" (the italics are mine).

X Q. 158. Are these the only statements in the specification which you find to support your conclusion that the flange or girder is loosely inserted in the tie?

A. Yes.

X Q. 159. Figs. 2 and 3 show the ends of the girder or flange inserted in the tie groove closely, do they not?

A. They show the sides of the depending girder contacting with the sides of the cavity in the tie. They do not show the bottom of the beveled edge of the girder contacting with the bottom of the cavity in the tie. Fig. 3, however, is a sectional view through lines 3—4 which is at a point intermediate the tie and the tie D is only shown as being in the rear of the section intended to be illustrated by Fig. 3, yet that portion of the tie which is shown, discloses the fact to be that the cavity in the tie is of greater depth than the depending girder B.

There is nothing in any of the drawings of this Wootten patent, as I read them, to indicate that the girder B or the ends thereof have a wedged contact with the cavity and tie.

X Q. 160. So far as the drawing of Fig. 2 shows it indicates the same kind of contact between the sides of the flange or

1112 girder and the tie as between the sides of the spikes in the tie, does it not?

A. That is true, but it is of common knowledge that in the application of spikes to railway ties that cavities are not prepared for the reception of spikes, while a cavity is prepared for the reception of the beveled ends of the girder B.

X Q. 161. And so far as the drawing indicates in Fig. 2 there is the same kind of contact between the sides of the lower rib or girder and the tie as between the bottom of the rail and the top of the plate, is there not?

A. Yes.

X Q. 162. And the specification speaks of this girder as a rigid girder, does it not?

A. In speaking of this girder the specification says that it—

"serves as a rigid girder to support the ends of two rails."

X Q. 163. The chair device shown in the Hudson patent No. 142,020, dated August 19, 1873, is shown and described as a metallic piece with shoulders against which the side of the rail flanges abut, an upper grooved surface sustaining the rail and on which the rail bottom is placed, and a lower projection, rib or flange which is placed in a groove in the tie?

A. Your question presupposes that the joint is intended to be made over a tie, and leaves out entirely the fact that what you call the upper grooved surface is therein formed to receive a corresponding flange rolled on the bottom of the rail. There is nothing in the specification nor in the drawings to indicate that this rail joint is to be used upon a tie, but if the joint were made over a tie and this form of rail joint employed, the depending flange B would have to be seated in the previously prepared cavity champered or cut out from the tie.

1113 X Q. 164. Does not the Hudson patent show a piece of metal with an upper single grooved surface on which the rail is to be placed, side shoulders or flanges against which the rail flanges are intended to abut and a lower projection or rib parallel to the groove in the upper surface and to the shoulder flanges adapted to be placed or seated in the tie? I would like to have you answer this question yes or no, if it is possible.

A. Yes, one member of this Hudson rail joint shows a piece of metal of such configuration as you have described in the question with the possible exception that there is nothing shown or described in the patent to indicate that it is to be placed or seated in the tie.

X Q.165. And this piece of metal that has been described in the last question is a separate and distinct piece of metal, is it not?

A. I have already said that it was one member of the Hudson rail joint.

X Q. 166. And in its construction and until it is placed in track it is a distinct and separate device, is it not?

A. No, because it is made and intended to be joined with other portions of the device to constitute a railway joint.

X Q. 167. But until it is placed in track it is not physically connected with any other portion or any other device, is it?

A. I should judge not.

X Q. 168. And when it is placed in track it is secured to the rail flanges and with the rail flanges intermediate to the upper plates by means of bolts and nuts, is it not?

A. Yes.

X Q. 169. And it is a natural conclusion, is it not, from the device and the proposed use of it that the lower projection B is intended to be placed or seated in the tie?

1114 A. Not at all, the lower projection designated on the drawing, Fig. 2, as B, may be for two purposes, and in all probability is for two purposes, to strengthen the base plate of the rail joint somewhat after the manner of the girder of the Wootten device and also to add additional strength to the base plate, where it has been weakened by the removal of the metal on its upper face to form the

groove in which the depending flange on the bottom of the rail was intended to be seated.

X Q. 170. But wherever the joint came over a tie the lower flange B would be seated in the tie?

A. If it were employed in that way the lower flange B would have to be seated in a previously prepared excavation or groove cut out of the upper face of the tie.

X Q. 171. Is it not also a fact that the specification of the Hudson patent states that the flange B may be V-shaped or other suitable shape?

A. No, it does not. The specifications say:

"In the annexed drawings AA represent the two contiguous rails of a track. The bottom side of each is provided with a flange B which extends down, and which may be made in the shape seen or it may be V or other suitable shape."

This refers clearly to the flange on the bottom of the rail and the same lettering has been employed to indicate both flanges, the ones on the bottom of the rail and the ones on the bottom of the rail joint.

X Q. 172. In your judgment, where the rail joint in the Hudson device came over a tie and the lower flange was seated in the tie, would this seating of the flange in the tie tend to prevent lateral movement or horizontal movement assuming that it was fitted closely?

A. Unless it was wedged in its seating in the tie to such an extent as to be impractical because of the tendency to split the tie, it would not prevent horizontal movement, especially in the absence of any spikes penetrating apertures in the base-plate.

1115 To the extent that the sides of the depending flanges abutted against or contacted with (without necessarily being wedged) they would tend to resist the lateral movement of the base-plate, although the depending flange being located in the center of the bottom of the base-plate might be subjected to a more or less rocking motion due to lateral strain and again this would have a tendency to split the tie and break away the walls of the cavity.

X Q. 173. Is it your opinion that if the base-plate were placed on the top of a tie so that the sides on each side of the flange B rested upon the tie and the flange B were placed in a groove in the tie so that the sides of it were in close contact with the sides of the tie groove and the bottom of the flange rested upon the bottom of the groove in the same way that the sides of the base-plate rested upon the tie, there would be any danger of a rocking movement or splitting of the tie?

A. I take it that your question presupposes, as in X Q. 172, which I have just answered, that it was a rail joint that was thus placed upon the tie and there being a total absence in the Hudson device of spike apertures through the base-plate by which it would be engaged with the tie, and the base-plate being securely bolted to and becoming a part of the abutting rails, the rail joint would, in my judgment, have a horizontal movement incident to the passing traffic which in time would wear the upper face of the tie incident to this horizontal or grinding motion and the dust or grit intervening

between the bottom of the plate and the face of the tie, and the blows being greater at the outer side of the base-plate, the tendency would be in time to produce an inequality on the face of the tie and to produce a rocking motion which would be transmitted to the depending flange on the bottom of the plate, thus forming a leverage or lever to push apart the walls of the cavity and split away or out that portion of the tie.

1116 X Q. 174. If the device were spiked to the tie would this supposed tendency be overcome in whole or part?

A. Only in part and temporarily. In the first instance the horizontal movement of the rail and necessarily the joint attached thereto would be against the head or heads of the spikes when they had been sufficiently lifted the horizontal movement would proceed to produce the effect which I have described in my previous answer.

X Q. 175. If the device were spiked and the bolting to the rail omitted, but the device were used on a tie because the joint came there, would this tendency or objection that you have suggested be overcome?

A. It would not be entirely overcome although it would not be so marked for the reason that the ends of the abutting rails being free and not attached fixedly one to the other you would have two separate and distinct blows upon the base-plate as each wheel passed over it.

X Q. 176. But if the rails were secured at the joint to each other by means of the plates C, as shown in the Hudson device, omitting the bolts which pass through the chair and the rail flange and the plate and in this way rigidity were secured at the rail joint, this last objection which you have suggested would be obviated, would it not?

A. To a great measure, but I do not believe from my study of tie-plates as exemplified in this case that you would get the full effectiveness of resistance to horizontal movement unless the spikes employed to fasten the base-plate to the tie penetrated apertures formed in the base-plate, thus tying all the parts of the base-plate and the spikes together.

X Q. 177. One of the principal objections which you have had to the use of the chair device shown in the Hudson patent in preventing lateral movement is, as I understand your answer,

1117 due to the lack of rigidity at the rail joint unless the rails, fish-plates and chair device are rigidly secured together. I mean that the lack of rigidity due to the joint is a large element in producing a pounding movement and that this rigidity is best secured by closely uniting rails, fish-plates and chair?

A. I have intended in my answers to convey the fact as I saw it, first that when all the parts of the Hudson rail joint were employed and securely fastened to each other and to the rail that the rail joint thus formed moved with the rail and was subject to all of the movements of the rail both horizontal and lateral; second, that when the fish-plates were not used and the base-plate was not bolted to the rail and the base-plate and the adjacent ends of the rails came over a tie or was so placed that the seating of the depending flange was in a previously prepared excavation in the tie, it

might have a tendency to and would to some extent resist the lateral movement of the rails but that the base-plate would then receive two horizontal blows as each wheel passed over each of the ends of the abutting rails, and in the absence of spikes passing through spike apertures in the base-plate, horizontal movement of the base-plate would be present.

X Q. 178. Your conclusion in this matter is not based on any experiment that you have had, is it?

A. It is not based on any personal experiments, it is based on a study of the patent exhibits and printed publications and the testimony in this case.

X Q. 179. If the Hudson base-plate were placed on a tie at an intermediate point in the rail between joints and the bolting to the flanges of the rail omitted and the device spiked to the tie, would it not operate as a tie-plate with lateral shoulders on the top, a single upper grooved rail bearing surface and a lower depending
1118 flange parallel to both shoulders and grooves and seated in the tie? Please state whether this is not the fact, and then, if you wish, state your objections to such use.

A. It would so operate but, in my judgment, there is nothing in the specifications of the Hudson patent to indicate or suggest such use, nor is there anything in the specifications of said patent to indicate that the patentees had any conception of such use.

It would not be an efficient tie-plate and would not be a practical tie-plate for the following reasons, first, there are no spike apertures shown through which the spikes pass, thus tying the plate, the spikes and the various flanges together and causing them to cooperatively resist the lateral and horizontal strain; second, the depending flange on the bottom of the chair not quite one-fourth the width of its entire base is of such a size and configuration that a cavity or excavation would have to first be made in a tie and this additional expense would, in my judgment, preclude its employment; third, all the ties for the entire length of a rail would have to be thus prepared and the chairs seated therein before the rail could be laid down; fourth, in case it was desired to remove any of these base-plates intermediate the ends of the rail because of breakage or wear, the rail throughout its entire length would have to be lifted before another base-plate could be substituted for the broken or worn plate to be removed. This would be necessary as I have heretofore pointed out in considering this Hudson patent in my direct examination to enable the introduction of the depending flange into the previously prepared cavity in the tie.

Recess.

X Q. 180. Then if the Hudson base-plate were so placed on a tie at an intermediate point in the rail between the joint and
1119 the bolting to the rail flanges omitted and the device spiked to the tie, we would have a tie-plate consisting of a metallic piece with side shoulders or flanges parallel to the rail, an upper surface with a groove parallel to the rail upon which upper surface

the rail bottom rested and a lower depending flange parallel to the rail seated in the tie, would we not?

A. Yes, presuming that the base-plate was not bolted to the rail but it would not be a practical tie-plate for the reasons I have pointed out in answer to your last question and for the further reason that its weight would preclude its use because of the increased cost.

X Q. 181. But irrespective of the convenience of installation or removal and the question of weight and cost, the device as so described in the last question, would be a tie-plate with the features mentioned in that question?

A. Yes, it would be a tie-plate in the sense that it was an insert between the rail and the tie and would have the features you have named.

X Q. 182. And this device last described with the bolting to the rail flange omitted and the spiking made would be a tie-plate having shoulders or side flanges against which the rail flange abutted, an upper grooved surface upon which the rail rested and a lower projecting flange seated in the tie, would it not?

A. Yes, it would be a tie-plate in the sense that it would be an insert between the rail and the tie and would have the features you have named in the question.

X Q. 183. And under the circumstances detailed if the Hudson device were of the ordinary tie-plate dimensions as to length and width when so placed, as just described, it would perform the functions of preventing to some degree the cutting or wear of the tie by the rail and of holding the rail in position and preventing lateral movement or spreading?

1120 A. Only to a very limited extent, as I have heretofore pointed out and for the reasons I have heretofore stated.

X Q. 184. Do you consider the spiking the plate to the tie is an essential part of tie-plate construction and function?

A. In the sense that the spikes penetrate apertures in the tie-plate and using the word spiking in that sense I believe it is an important and essential feature of the tie-plate in which are exemplified the best features of utility for the reasons as heretofore stated in my direct examination. Where the spike- penetrates and pass through the plate they perform the dual function of holding the plate securely to the tie, thus preventing its movement more or less upon the tie, and the spikes are tied together, as it were, by the plate so that any tendency of lateral movement of the plate is jointly resisted by all the spikes.

X Q. 185. Then you do consider that in all tie-plates that you have become acquainted with and that have been shown in this litigation, it is an essential feature that the tie-plate be spiked to the tie through apertures in the plate?

A. Stated just a little differently it is my opinion that the highest degree of utility is attained in those tie-plates which are provided with spike apertures in the plate.

X Q. 186. But you also believe, do you not, that devices can be used as tie-plates without being spiked through apertures therein

or being spiked at all, although if not spiked either through apertures or at all, the efficiency is not so great?

A. In the sense of being inserts they might be so used but they would lack efficiency.

X Q. 187. Referring to the device shown in the patent to Wells No. 203570, May 14, 1878, it is a fact, is it not, that a section
1121 of the device therein shown and described, say six or eight inches in length, could be seated in a tie and used as a tie-plate?

Col. Brown: Question is objected to as calling for an opinion upon a structure not disclosed or described nor even suggested in the Wells patent referred to; and which hypothetical structure is not shown by this record to have ever been constructed and used for the purpose indicated in the question at any time prior to the beginning of the suit at bar and as not being therefore part of the prior art. The question is therefore objected to as incompetent, irrelevant and immaterial.

A. No, it could not be used as a tie-plate, considered as a mere insert it might be so used. I am confirmed in this opinion by the testimony of Mr. Carter, defendant's expert, who said in answer to practically the same question:

"It would be practical in the sense of being possible practice, in the sense of being commercially practicable it undoubtedly would not be, since the art furnished so many devices which are obviously more satisfactory."

And by reference to the testimony of Mr. Faulkner, defendant's tie expert, who, in answer to X Q. 756, as to what in his opinion would be the effect on the tie of cutting the tie to substantially half its thickness in order to produce this socket for the rib to rest in, said:

"Oh, the tie would break, it would be liable to break."

In confirmation and in addition to the views expressed by Mr. Carter and Mr. Faulkner, I would say that it could not be used as a tie-plate for the following reasons: First, there being no spike holes penetrating the device the flange of the spike contacts directly with the flange of the rail and would soon be loosened from the tie and the pounding of the chair and the tie would then proceed;

1122 Second: The aperture made in the tie to receive the depending flange or rib would necessarily have to be made of a size slightly larger than the rib otherwise, because of its size and the depth of the aperture, if it were to be wedged in, that alone would have a tendency to break and destroy the tie.

Third: If not wedged in as described in the preceding paragraph, the flange is of such a size, in my opinion, and being located in the center of the bottom of the chair when the spikes have become loosened, a rocking motion would be imparted to the chair due to the lateral thrust of the rail and the extreme leverage is such that, in my opinion, it would tend to split the tie.

Fourth: Its weight would be such as to preclude its use as a tie-plate because of the expense incident to its production.

Fifth: In equipping a new line it would be necessary to materially add to the cost thereof by the labor incident to the cutting of the tie to a sufficient depth to receive the rib E.

Sixth: Ties when so cut to receive the rib E would be materially weakened and the tie would break.

Seventh: It would be impossible to replace one of these devices without removing the entire rail, because such a device could not be slipped in under the rail, and

Eighth: In equipping a new line it would be necessary to cut out each of the ties throughout the entire length of a rail to a sufficient depth to receive the rib E and then place the devices upon the ties before the rails could be laid.

For the reasons therefore quoted from the testimony of defendant's witnesses as well as for the reasons I have above given, I do not believe that the structure contemplated by your question could or would be used as a tie-plate or that there is anything in the
1123 drawings or specifications of the Wells patent which would suggest such a use, inasmuch as I understand from the testimony of Mr. Faulkner that the railway chair therein shown is practically sixty inches long; and I further do not believe that there is anything in the specification to even suggest that the patentee, Wells, comprehended, understood or contemplated any such use.

X Q. 188. The question propounded was a very simple one and asked whether a section of the device shown in the Wells patent six or eight inches in length could be seated in a tie and used as a tie-plate. Do I understand you to give it as your opinion that it would be a physical impossibility to place such a section in a tie and have it perform any functions as a tie-plate either with or without spiking, without apertures, and as shown in the drawing of the Wells patent?

A. Yes, with the single exception that it might perform the one function of being an insert.

X Q. 189. Would the device shown in the Wells patent if placed in track in the manner shown in the specifications and drawings in any way operate either to hold the rails in place and prevent spreading or prevent the wear of the tie by the rails?

A. I understand your question now to comprehend the railway chair as shown in the specification and drawings of the Wells patent and in reply to such question I would say that it would operate to prevent the rails spreading and that for a very limited time it might operate to save the tie from wear, but this would only be true until such time as the spikes had become lifted by the operation of the flange of the rails against the flange on the head of the spikes, and when the spikes were thus loosened the chair would be subjected because of its length, not only to the pounding of the rail but to tilting or tipping motion incident to the passage of the wheels
1124 over that portion of the rail immediately above its ends (ends of chair).

X Q. 190. Then this last difficulty would be removed by more

securely fastening the chair to the ties, for instance, by having lugs or projections along each side of the device with spike holes therein, one or more for each tie, or by widening the side flange and making spike holes therein and in that way spiking the chair to the ties securely?

A. I think that would put off the evil day or serve to prolong the time before the result I have spoken of should appear. The evil is one incident more particularly in my opinion to the length of the device because the wave motion incident to the passing train along any portion of this lengthy device must necessarily affect the whole structure.

X Q. 191. In your opinion, could a metallic plate made exactly like the aluminum model O^6 be seated in a tie and spiked to it by outside spikes in the way illustrated in the Wells patent and when so seated and spiked serve to keep the rails from spreading and to any degree the rails from cutting or wearing the ties?

A. Not for any considerable length of time?

X Q. 192. But still if such metallic plate were so placed in a tie it would accomplish both of these purposes for some period, would it not?

Col. Brown: The objection stated to X Q. 187 is here repeated to X Q. 191 and to the present question and to save time it is understood that this same objection will stand as being made to any similar question.

A. Yes, but not for any considerable period which in my judgment would warrant its employment in railway construction.

X Q. 193. Then such a device as the metallic or steel
1125 reproduction of aluminum model O^6 if seated and spiked as just described would for a time perform the functions of a tie-plate subject to the limitations which you have just detailed?

A. No, I don't think it would perform the functions of a tie-plate any more than a mere toy would perform the function of an operative machine.

X Q. 194. How long in your judgment would a tie-plate made up in conformity with aluminum "Exhibit O^6," and seated and spiked in the manner described operate to prevent the rails from spreading and the rail from wearing the tie upon the ordinary railroad as now operated?

A. As I have heretofore said, only during such length of time as it might be required, depended upon the weight and amount of traffic upon the road, to lift the flanges of the spikes from engagement with the rail flanges.

At this point it may not be out of place for me to say that it is my understanding that in railroad construction it is not the practice to drive the spikes into the tie until the heads of the spikes engage the flange of the rail as is shown in the drawings of the Wells patent, and therefore if the usual practice is followed of not engaging the heads of the spikes with the flanges of the rail, a device constructed in the form of "Defendant's Exhibit O^6" and so

spiked would not at any time perform the functions of preventing the rail from wearing the tie.

X Q. 195. This objection to this mode of spiking would be obviated and the device more securely fastened and its effectiveness increased as a tie-plate by spiking through apertures in side lugs or the extended flanges would they not?

A. Yes, if it were redesigned, amounting to a radical departure from its present form, it might possibly do so and probably would.

1126 X Q. 196. It is suggested in the specification of the Wells patent that the side flanges prevent any lateral displacement of the rail and that the lower central rib also serves to prevent lateral displacement. Do you agree with these suggestions?

A. It is barely possible that in a structure of the length of the Wells chair, which I understand to be some five feet in length, thus presenting lateral flanges five feet in length against which the flanges of the rail abuts and a depending flange on the lower side of the chair which is likewise five feet in length and intended to be seated in four apertures cut out of four ties, would prevent the lateral displacement of the rail and I would for those reasons agree with the statement of the specification of the Wells patent.

X Q. 197. Do you not think that if this construction were limited to six or eight inches in length and placed on and seated in each tie and secured in the way shown in the Wells patent that the devices would operate to prevent lateral displacement of the rail?

A. No, not for any continued length of time for the reasons heretofore expressed that when the lifting of the spike commenced, the destruction of the tie commenced and the enlargement or breaking out of the aperture of the tie would prevent the continual fulfillment of this function.

X Q. 198. The inventor in the Wells patent in its claim specifies his claimed structure as follows:

"A railway chair constructed with vertical sides, which extend above and constitute side flanges, and provided on its upper surface with a central bearing C, side bearings F F^1, and grooves B B, and having a lower depending flange E, substantially as set forth."

Do you agree that that is an accurate description of the device?

1127 A. Yes.

X Q. 199. And in your opinion is a device of the character described in the claim just read and quoted clearly shown and described in the specifications and drawing of the patent?

A. Yes.

X Q. 200. And it is a fact, is it not, that the device shown and described in this letters-patent to Isaac Wells is intended as a device for railroad track construction and maintenance and as an insert between the rail and the tie?

A. To the first part of your question I should answer yes; to the second part of your question I should say only in the broad sense and not in the sense of a tie-plate.

And thereupon an adjournment was taken to Thursday, June 30, 1910, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, June 30, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

X Q. 201. In giving your testimony you have frequently used the term "anticipates," for instance or for example, in speaking of the Servis patent you say "I am therefore of the opinion that this Servis patent fails to show a structure which anticipates the tie-plate shown, described and claimed in the eighth claim of the Wolhaupter patent in suit, No. 538,809." What do you mean by the term "anticipates" as you have employed it throughout?

A. I think I can best illustrate my meaning by explaining the negative sense in which I have used the word "anticipates," that is, certain prior art devices referred to in my testimony as
1128 not anticipating the patents in suit neither show the combination of elements called for by the respective claims at issue, nor show the essential elements of said claims, and when such has been the case I have said that they do not anticipate the claims in suit.

X Q. 202. Then when you say that the Servis patent does not show a structure which anticipates the tie-plate described in claim 8 of Wolhaupter patent No. 538,809, you mean that the Servis patent as a whole does not anticipate claim 8 as a whole, do you?

A. Yes, and with the further suggestion that claim 8 of the Wolhaupter patent No. 538,809 calls for a railway tie-plate provided on its upper side with a series of flanges on which the rail rests, while the upper side of the plate of the Servis patent is flat and there is nothing, as is stated by Mr. Carter, defendant's expert, in the patent or the drawings to suggest top flanges.

X Q. 203. Comparing only the construction of the lower parts or under sides of the Servis patent and the structure called for in claim 8 of said Wolhaupter patent, do you find anything shown or described in the Servis patent which anticipates that which is shown in the Wolhaupter structure designated?

A. The eighth claim of the Wolhaupter patent No. 538,809 also calls for a railway tie-plate formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie. As I have already pointed out in my direct examination the Servis patent No. 249,407 shows a flange or flanges D formed upon the lower side of the plate C and beveled or rounded at one end or they may have square edges. The specification says:

"Upon the lower side of the plate C are formed one or more flanges D which are made thin so that they can be driven into the tie or sleeper B lengthwise of the grain of the wood without splitting or otherwise materially affecting the timber.

1129 The difference manifest between the flanges on the bottom of the plates is manifest in that in the Servis the flange or flanges are of such construction that they are intended to be and must be, in the language of the specification, driven into the tie or sleeper, while in the Wolhaupter plate the devices on the bottom of the plate are adapted to penetrate and engage the tie by means of the weight of the passing traffic.

To the extent only that both the Servis patents and the Wolhaupter patent No. 538,809 show depending flanges on the bottom of the plate, is there any similarity between the two devices.

X Q. 204. In your judgment then both the Servis patent and said Wolhaupter patent on the under surfaces or sides of the structure or plate show parallel flanges adapted to penetrate and engage the tie when in place?

A. I think that is substantially correct with the distinction that I have previously pointed out as to the difference in the process of penetrating and engaging the tie.

X Q. 205. And in both structures the lower depending flanges penetrate and engage the tie parallel to the grain of the wood, do they not?

A. In both drawings they are so shown, but in neither of the claims are they so limited.

X Q. 206. In your judgment are the lower depending flanges in either the Servis or Wolhaupter patent No. 538,809 adapted to penetrate and engage the tie crosswise of the grain thereof or at right angles to the grain?

A. In the Wolhaupter patent I should say they could be and are adapted to be so used. In the Servis patent I should think that their use in the manner suggested by your question would be unwise because the length of the depending flanges shown in the drawings of the Servis patent in all probability would have a tendency to split the tie.

1130 X Q. 207. In letters-patent to W. F. Gould, No. 280,030, June 26, 1883, the lower surface of the plate shows sharpened flanges or beads adapted to be pressed down and embedded in the top surface of the cross-ties, does it not?

A. It does.

X Q. 208. And do you construe the specifications and drawings as showing that these beads are parallel to the grain of the tie or at right angles to it?

A. At right angles.

X Q. 209. And the upper surface of the plate as shown and described in the Gould patent indicates parallel grooves, does it not?

A. It does, but these grooves are for the purpose of receiving small V-shaped beads rolled on the bottom of the rail and these grooves on the face of the plate are correspondingly small and likewise V-shaped.

X Q. 210. But the plate constructed under the Gould patent would show these upper surface parallel grooves when it was manufactured, would it not?

A. If by the expression "these" you mean very small V-shaped grooves shown in the drawings I should answer "yes."

X Q. 211. And does not the Gould patent show a side shoulder projecting above the rail bearing surface and against which the side of the rail flange impinges or abuts?

A. It does.

X Q. 212. Then the plate shown in the Gould patent has an upper rail bearing surface showing therein two small V-shaped grooves running the entire length of the plate and a projecting side shoulder or flange running the entire length of the plate on its upper surface and lower projecting flanges from the under surface running the entire length of the plate and intended to be pressed down into the tie. Is not this the fact?

1131 A. Yes, but in my opinion the small V-shaped grooves in the face of the plate are not there in the sense and for the purpose of the transverse grooves or channels in the Wolhaupter patent No. 721,644.

X Q. 213. Does it, in your judgment, make any difference so far as anticipation is concerned that the grooves on the upper surface of the Gould plate are parallel to the rail instead of at right angles or transverse to the rail as the hollows or depressions shown in the Wolhaupter construction in No. 538,809?

A. If the grooves of the Gould device were rolled at right angles to the rail instead of lengthwise of the rail they might perform the function called for by the Gould patent of forming in combination with the V-shaped flanges on the bottom of the rail, a retaining device for the rubber cushion, but I should think it would be exceedingly difficult to roll them in such position and likewise difficult to roll corresponding V-shaped flanges on the bottom of the rail flange.

My understanding of the term "groove" is that it applies only to such instances where material is cut out of the face of the plate or article or a depression formed by bending or depressing the material downward.

No such grooves, in my judgment, are present in the Wolhaupter patent No. 538,809. On the upper face of this plate there are rolled a series of flanges which project above the face of the plate. I therefore can not see that the comparison suggested by your question is applicable.

X Q. 214. Does it, in your judgment, make any difference so far as anticipation or patent anticipation, whether the flanges or depressions on the upper surface of the tie-plate are parallel to the rail or transverse to it?

A. In my judgment depressions are not flanges and mere depressions would not anticipate flanges.

1132 X Q. 215. I did not ask you whether depressions and flanges were the same, nor does the question call for any such answer, if you desire to answer it squarely. The question was whether, in your opinion, it made any difference as to anticipation or patent anticipation, whether the flanges or depressions on the

upper surfaces of the plate were parallel or transverse to the rail length. Please answer that question.

A. If depressions on the upper surface of the plate could be construed to be flanges and they both performed the same function, in my judgment it would make no difference whether they were parallel or transverse to the rail length.

X Q. 216. I do not care to be put in the absurd position of having flanges and depressions construed as meaning the same thing, when to my limited understanding they mean opposite things. I will therefore segregate the question. Please state whether, in your opinion, the rail bearing flange or flanges on which the rail bottom rests in a tie-plate are the same so far as anticipation or patent anticipation is concerned, whether they are parallel to the rail length or transverse to it?

A. They are in my judgment the same.

X Q. 217. And are depressions, hollows or grooves in the rail bearing surface of a tie-plate the same so far as patent anticipation is concerned, whether they run crosswise of the rail length or parallel to it?

A. That would depend entirely upon what they were put there for. If they are there for the purpose of being used as sand spaces or channels, they would not be the same.

X Q. 218. You mean if the upper surface depressions, hollows or grooves in a tie-plate are put there for the same purposes, they are the same in the patent anticipation sense, but if for different purposes, they are not the same in the patent anticipation sense?

1133 A. No, I don't mean anything of the kind. I mean to point out the distinction which is present in this case and which is the only one I have now in mind, that where the grooves as in the Wolhaupter patent No. 721,644 are transverse the plate and in line with the rail, such a device would not be anticipated by grooves formed longitudinal of the plate and at right angles to the rail for the reason that they would not perform the same functions in the same way.

X Q. 219. Could not the Gould plate, I mean the metallic part thereof, be placed underneath an ordinary flat bottom rail and serve the functions of a tie-plate having an upper shoulder or side flange against which the rail flange abutted, grooves in its upper surface parallel to the rail and lower penetrating flanges on its under surface parallel to the rail and adapted to engage with the wood of the tie crosswise?

A. In the sense of being an insert between the rail and the tie, it might be so used, but in my judgment it would be of short life and be very limited in its utility.

The only method of spiking it to the tie shown is by spikes engaging the tie and the flange of the rail entirely outside of the plate and as explained in connection with other devices, the lifting of the spikes by the movement of the rail would soon leave the two depending flanges on the bottom of the plate the only means of at-

taching the plate to the tie and preventing upward movement thereof.

X Q. 220. Then your objection to the use of a tie-plate made in accordance with the specifications and drawings of the Gould patent so far as the metallic part is concerned is that there are no apertures or means shown for spiking through the plate itself?

A. No, that is only one objection. There are no projecting flanges on the face of the plate upon which the rail rests and
1134 the face being practically smooth so far as that feature is concerned, the upper face of the plate would soon become worn and its efficiency destroyed as illustrated in "Complainant's Exhibit No. 47, Flat Top Tie-Plate, Showing Rail Wear."

X Q. 221. Is it not a fact that the rail bearing surface of the metallic portion of the Gould tie-plate is separated by the two grooves into three rail bearing surfaces, the two side ones narrow and the center one broad?

A. Yes, but these V-shaped grooves are so insignificant and small and the broad upper surface of the plate between the grooves is so proportionately large that we have practically a smooth upper surface to become worn by the rail.

X Q. 222. How do you know that a broad rail bearing surface in a tie-plate is worn down more rapidly than a flange rail bearing surface, or a rail bearing surface made up of flanges?

A. By the evidence and exhibits in this case and my own understanding and knowledge of the relation of wearing surfaces. It is perfectly apparent to me that where the rail base is supported upon flanges there is less wear for the reason that less grinding material or wearing material, like dust or grit, can intervene between the surfaces.

X Q. 223. You do not think then that a tie-plate made of steel in conformity with "Defendant's Aluminum Exhibit O[22]" which is intended to reproduce the Gould structure, could be used as a tie-plate?

A. I have already said that it might be used as a mere insert but that it would have no practical utility as a tie-plate.

X Q. 224. And this lack of utility is due in your judgment, to the lack of spiking means through apertures and the flatness and breadth of the rail bearing surface, are those your reasons?
1135 A. Yes, sir, it presents to my mind no utility over a practically flat faced plate.

X Q. 225. In your judgment are spiking apertures or apertures for spikes necessary in tie-plates?

A. For full realization of its practical utility I should say they were.

X Q. 226. Will you please point out in the specifications and drawings of letters-patent No. 691,332, dated January 14, 1902, to B. Wolhaupter, which is the second patent in suit, the spike apertures?

A. I do not think that there is any reference in the specifications or in the drawings themselves of the patent referred to of spike apertures.

X Q. 227. The letters-patent to Dockstader, No. 462,399, November 3, 1891, show a device with side shoulders or flanges parallel to the rail, a central groove or depression in the rail bearing surface and projections of various kinds upon the lower surface for engaging in the tie, do they not?

A. No, they do not show flanges on the upper surface.

X Q. 228. Well, they show the other elements described, do they not?

A. The patent to Dockstader shows a lock rail joint which has the other features named in your question.

X Q. 229. What would you call the upper projecting side pieces which embrace the flanges of the rail and as I understand you have just declared are not flanges?

A. They are called in the specifications of the patent in question surfaces.

X Q. 230. Are they not called in the specifications flanges? I direct your attention to lines 46 to 52, inclusive, which read:

"The chair B is also formed with two upwardly projecting flanges B^1 B^1 suitably shaped to embrace the lateral flanges a a upon the base of the rail and engage at their upper edges against the 1136 under side of the heads a^1 a^1 of the rails adjacent to the webs of the latter."

And again in the following paragraph where they are spoken of as flanges?

A. No. If you will commence your reading with line 42 and read the entire paragraph which is as follows:

"In said drawings, A A indicate the adjacent ends of the rails, and B a chair of wrought or cast iron, steel, or other suitable material. The chair B is formed with a flat surface b, upon which the ends of the rails rest. The chair B is also formed with two upwardly projecting flanges B^1 B^1, suitably shaped, to embrace the lateral flanges a a upon the base of the rails and engage at their upper edges against the under side of the heads a^1 a^1 of the rails adjacent to the webs of the latter. These flanges B^1 B^1 are curved or deflected inwardly, so as to approach the webs of the rails above the flanges a a at the bottom of the rails, and are then directed upwardly and inwardly, so as to engage the webs of the rails adjacent to the head of the latter."

You will discover two things, first, that the chair B is formed with a flat surface b upon which the ends of the rails rest; second, that the flanges B^1 B^1 are the side flanges and are curved or deflected inward so as to approach the webs of the rails above the flanges.

X Q. 231. That is exactly what I asked, whether or not there were not side shoulders or flanges shown in the specifications and drawings of this patent. I did not mean the flanges upon which the rail rested but lateral flanges against which the rail flange abutted and which embraced the rail base. It is clear, is it not, that such side flanges do exist in the patent structure?

A. Yes.

X Q. 232. Letters-patent to W. Goldie for "Tie-Plate," No. 485,030, October 25, 1892, clearly show and describe a tie-plate with an

upper rail bearing surface which has a central hollow or
1137 groove parallel to the rail length, a side shoulder or flange against which the rail base abuts and lower projections sharpened and adapted to penetrate the tie parallel to the rail length and crosswise of the tie, do they not?

A. With the single exception that it does not have a central hollow or groove, but does have a central depression, the thickness of the metal being the same throughout excepting where the side shoulder or flange and the lower projections appear, I would answer your question yes.

X Q. 233. And these elements of the upper rail bearing surface with a central depression, side shoulder or flange and lower projections sharpened and engaging in the tie, are each and all clearly shown and described in the letters-patent specification and drawings, are they not?

A. Yes.

X Q. 234. Is there anything in the specifications or drawings of this letters-patent which indicates that the rail intended to be used in connection with this tie-plate was anything but a flat bottom rail, if so, please point it out.

A. Coupled with the knowledge that I have from the evidence in this case that at the date of this patent rails were rolled full in center or under side of the flange, I read commencing with line 19 of page 1:

"The invention consists of a tie-plate having its central portion provided with a transverse cavity in its upper surface to receive the rail."

It is perfectly apparent to me that if such a plate were to be used with a flat bottom rail flange, the depression being formed simply by bending the metal, that it would soon flatten out and become practically straight as I recall was the case in one of the Goldie exhibits in this case.

X Q. 235. The first figure in the drawings connected with
1138 the patent shows a flat under surface of the rail, does it not, as you look at it?

A. No, it don't.

X Q. 236. You were obliged to test it with a straight edge, were you not, before answering the question, and did do so?

A. I did so test it but my eyes gave me the impression before I so tested it.

X Q. 237. The deviation, however, of the bottom line of rail in the drawing is extremely slight, is it not?

A. It is about as much as the space shown between the bottom of the rail and the upper face of the depression in its central portion.

X Q. 238. And there is a noticeable space left between the rail bottom and the top of the depression in the drawings?

A. Yes, I should think that would be due to the variations in the bottom of the rail flanges.

X Q. 239. Letters-patent to P. Reece, No. 494,692, April 4, 1893, show and describe a tie-plate with side shoulders against which the rail flanges abut, a flat rail bearing surface with apertures at the

sides and lower projecting flanges intended to engage in the tie and sharpened for that purpose, do they not?

A. Yes, with the exception that what you call side shoulders, the patentee calls abutments and I would call projecting lugs. The patent presents so far as the surface upon which the rail is intended to rest a practically flat or smooth upper surface.

X Q. 240. The last three patents referred to, namely, the Dockstader, Goldie and Reece all show spike apertures, do they not?

A. Yes.

Recess.

1139 X Q. 241. It is your idea that the dotted lines in the lower right-hand figure of "Defendant's Exhibit DDD," indicate cavities on the upper rail bearing surface and not grooves extending the entire length of the plate. I refer to the dotted lines in said figure marked *a a* and immediately below the figures 1:20?

A. Yes.

X Q. 242. And upon an inspection of such figure by the ordinary individual such dotted lines, and these dotted lines that I have specified, would at once suggest that there were cavities or grooves in the upper surface that did not extend the entire length of the plate?

A. Yes.

X Q. 243. Would not the first question that suggested itself to a person inspecting this figure and noticing these dotted lines be the question as to whether or not the cavities or grooves extended the entire length of the plate?

A. No, for the reason that this drawing Fig. 7 being a cross-section near one end of the plate, the dotted lines *a a* would indicate grooves which did not extend as near to the end of the plate as the point at which the cross-section was taken.

X Q. 244. Given a plate of the construction shown in Fig. 7 referred to in said exhibit, with cavities on its upper surface as indicated by the dotted lines, do you consider that it would be invention to extend the cavities the entire length of the plate?

A. I do, for the reason that it provides for and enables the performance of a function additional to and entirely different from that performed by the cavities which do not extend across the plate.

X Q. 245. The Wells patent issued in 1878 had shown in a railway chair grooves or cavities extending the entire length of the device, had it not?

1140 A. Yes, but as I have heretofore pointed out in my direct examination, the length of the Wells device being some five feet the suction produced by the passing train would not clear these grooves of the Wells device of sand, by they would become, as stated in the specification of the Wells patent, receptacles for sand or grit.

X Q. 246. Then the Wells patent had already suggested and shown grooves on the upper surface of the device extending its entire length and serving as receptacles for the sand?

A. Yes.

X Q. 247. Do you consider that the device shown in "Defendant's Aluminum Exhibit O[24]" as being in a patent sense an anticipation of the device shown by "Complainant's Exhibit No. 15, Defendant's Infringing Tie-Plate"?

A. Without conceding that the aluminum model referred to is a correct representation of Fig. 7 shown on "Defendant's Exhibit DDD," and only considering it in the light of your question, I would say that it does not anticipate the device shown in "Complainant's Exhibit No. 15, Defendant's Infringing Tie-Plate," for what must be the very apparent reason it is not provided with projecting flanges on which the rail is intended to rest.

X Q. 248. Each of these plates "Defendant's Aluminum Exhibit O[24]," and "Complainant's Exhibit No. 15," has at its upper surface a side flange or shoulder against which the side of the rail flange is intended to abut, has it not?

A. They each have such a flange.

X Q. 249. And each has in its upper surface two grooves extending the entire length of the plate and on each side of each groove and between the two grooves surfaces on which the rail bottom rests, is not this a fact?

A. It is with the distinction between the two devices that in "Complainant's Exhibit No. 15," there are projecting flanges
1141 above the plane of the plate upon which the rail is intended to rest, while there is an absence of such flanges in "Defendant's Aluminum Exhibit O[24]."

X Q. 250. Is there any substantial difference between the portions of the upper surfaces upon which the rail rests in these two exhibits so far as relates to the portion between the groove and the side flange or shoulder either in structure or function of these parts?

A. Yes, there is a difference which is largely structural and will be apparent with the statement that where projecting flanges are provided rather than mere surfaces on the face of the plate, the whole plate may be very materially lightened and thus cheapen its cost of production.

X Q. 251. Is there any substantial difference in structure or function between the rail bearing portion between the two grooves in these two exhibits?

A. Yes, as heretofore pointed out in "Complainant's Exhibit No. 15," the portion referred to in the question is a flange projecting above the plane of the plate, while in "Defendant's Aluminum Exhibit O[24]," the portion referred to in the question is a surface left in the plate after the cutting out from the body of the plate of two parallel grooves.

X Q. 252. And I suppose you will make the same distinction between those portions of the rail bearing surfaces of these two exhibits to the side of the grooves opposite and away from the projecting shoulders?

A. Yes, the same.

X Q. 253. In your judgment, would it make any difference as to the utility of the various devices concerning which you have testified and to which you objected on account of the spiking being

insufficient if, instead of ordinary spikes, screw spikes were employed to hold the device and rail in position, as for instance, in the Wells device?

1142 A. No, although I could conceive of a difference between the employment of screws and penetrating screw-apertures and spikes penetrating spike apertures, in the one the contact, if any, of the walls of the aperture would only be along the extreme edge of the screw-thread, while in the other form, the contact of the sides of the apertures would be along the sides of the spike.

Cross-examination of the witness, Major Miller, closed.

Redirect examination by Col. Brown:

R. D. Q. 254. Referring again to defendant's exhibit of the Wootten patent No. 66,437, please state whether or not Fig. 2 correctly or incorrectly represents the spike driven into the tie?

A. It does not correctly represent the spike driven into the tie. To properly represent the driven spike the cross-section lines which intersect the lines of the spike should be depressed downwardly to show the correct fibre depression incident to the driving of the spike.

Redirect examination closed.

Examination closed.

CHARLES R. MILLER.

And thereupon an adjournment was taken to Friday, July 1, 1910, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

1143 CHICAGO, ILLINOIS, June 28, 1910.

Met pursuant to adjournment.

Present:

Col. Taylor E. Brown, on behalf of the complainant.
James Negley Cooke, Esq., on behalf of the defendant.

It is agreed by and between counsel that the cross-examination of the witness, Miller, be suspended, temporarily, for the purpose of making a start with the deposition of another witness; and that in printing of the record the deposition of the witness, Miller, will be printed on continuous pages.

And thereupon, JOHN HOWARD MCELROY, a witness produced on behalf of the complainant having been first duly cautioned and sworn, upon oath, testifies in answer to interrogatories asked by complainant's counsel, Col. Brown, as follows, to-wit:

Q. 1. You may state your name, age, residence and occupation?

A. John Howard McElroy, age 43, Chicago, Illinois, solicitor of patents and mechanical expert in patent causes.

Q. 2. Are you the same John Howard McElroy who testified in this case during the taking of complainant's prima facie proofs?

A. I am.

Q. 3. State whether or not you have examined the various prior patents and printed publications set up in the defendant's answer in this cause, introduced in evidence on behalf of the defendant, and referred to in the deposition of defendant's expert wit-
1144 ness, Henry W. Carter, and have examined the various models and exhibit drawings offered in evidence by the defendant and whether or not you have examined all or any portion of the depositions taken on behalf of the defendant, including that of the witness, Carter?

A. I have examined carefully the patents and other publications offered in evidence by defendant as illustrated in the prior art, together with the various models and drawings, referred to in the deposition of defendant's expert, Henry W. Carter, and I have also read the aforesaid deposition.

Q. 4. Before calling your attention particularly to the prior art, I desire to ask whether or not anything contained therein, as the same is exemplified in the defendant's record, causes you to modify or qualify the conclusion that you expressed in your prima facie deposition as to what you understood the invention to be that was claimed in the various claims in issue of the three Wolhaupter patents in suit?

A. I do not recall that there is anything in the prior art that would change the views as expressed in my prima facie deposition of the matters inquired about.

Q. 5. Is there anything continued in the defendant's exhibits or proofs to lead you to change or modify the opinion that you expressed in your prima facie deposition with respect to the subject of infringement of the claims of the Wolhaupter patents in issue by the tie-plate introduced and marked "Complainant's Exhibit No. 15, Defendant's Infringing Tie-Plate"?

A. No.

Q. 6. Directing your attention to the prior patents introduced in evidence by the defendant I ask you to consider them separately and state whether or not in your opinion either of said patents illus-
trates, describes, claims or suggests the invention set forth
1145 in the several claims of the Wolhaupter patents in suit, giving your reasons for the opinion that you express; and in connection with each of these patents I would ask you to consider the depositions of defendant's expert, Mr. Carter and of complainant's witness, Major Miller, and if you agree or disagree with what either of these witnesses have said in respect to said prior patents, please so state?

A. In considering these patents I will take them up in the order that they are discussed in Major Miller's deposition beginning with his answer to Q. 6. The first of these is

Wootten Patent No. 66,437, July 2nd, 1867.

This patent, while it is called a "Railroad Chair" seems to be rather in the nature of a rail joint, inasmuch as the ends of two rails are bolted to the so-called chair. The structure is described very fairly by Mr. Miller, and it is obvious that it is not such a device as is contemplated by any of the claims in controversy of any of the Wolhaupter patents in suit as it is not a tie-plate and was not designed for and cannot have the functions of a tie-plate. To refer to the language of claim 8 of the Wolhaupter patent No. 538,809, it obviously is not "a railway tie-plate" nor is it "formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie," as the truss-like strengthening rib B is not sharpened, and instead of penetrating the tie, recesses have to be cut in the ties to the entire depth of the rib B which is fitted in the recesses instead of being forced into them by the weight of the rolling stock after the parts have been assembled. Moreover, this Wootten device obviously has nothing "on its upper side" corresponding to "a series of flanges on which the rail rests,"
1146 as its upper surface on which the rail rests is shown as flat. It cannot serve to anticipate or limit the claims of the Wolhaupter patents in suit, and I agree with the opinion expressed by Mr. Miller relative to this Wootten patent and its relationship to the structures defined by the various claims in controversy of the Wolhaupter patents. I do not understand that Mr. Carter claims that this Wootten device anticipates the claims in controversy of the Wolhaupter patents, and if my understanding of his views on this Wootten patent is correct, I, of course, agree with him.

Gregory Patent No. 93,875, Aug. 17, 1869.

This patent is for a "Railroad Chair" and in this case the title correctly describes the invention as it is a railroad chair of the type at one time employed in railroad building. It is not a tie-plate in the sense that that word is used in the Wolhaupter patents in suit, and it has none of the limitations of the claims in controversy of the three Wolhaupter patents in suit. Mr. Carter admits in his answer to X Q. 77 that this Gregory patent neither discloses nor suggests the construction covered by the claims in controversy, and I fully agree with the views of Mr. Miller and Mr. Carter relative failure of this Gregory patent as an anticipation.

Roosevelt Patent No. 124,856, March 19, 1872.

This patent for "Improvement in Splice Pieces for Railway Rails" is somewhat in the nature of a rail-joint, and illustrates sort of a spring connection between the abutting ends of two rails, which connection seems to be of no practical or commercial value and so far as I know never was used. It obviously is not a tie-plate, and has no bearing whatever on any of the claims in controversy
1147 of any of the Wolhaupter patents in suit, as is admitted by Mr. Carter in his answer to X Q. 78.

I fully agree with the opinion expressed by Mr. Miller that there is nothing shown, described or claimed in this Roosevelt patent that has any bearing on the tie-plate in controversy and there is nothing in the patent which would indicate that the inventor had any conception of its being used for a tie-plate.

Hudson Patent No. 142,020, Aug. 19, 1873.

This patent for a "Railway Rail Joint" illustrates a device B which has the general construction and mode of operation of the railroad chair rather than a tie-plate, and which is adapted to be bolted together with the curved metallic plates C having some relationship to fish-plates to the abutting ends of the two rails to form a joint. In its shape and proportions, as well as its weight, it is entirely unadapted for use as a tie-plate for the reasons set out in Mr. Miller's testimony relative to the same, which reasons need not be repeated.

To use the language of claim 8 of the Wolhaupter patent in suit No. 538,809, it is not "a railway tie-plate" and it is not "formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie" inasmuch as the rectangular rib there shown is too large to be forced into the tie, and must be fitted into channels or recesses cut in the upper face of the tie. Morever, it is not provided "on its upper side with a series of flanges on which the rail rests" as while it does contain a transverse channel extending in the direction of the length of the rail, that channel is filled by the rib or flange B formed on the lower side of the rail A, which is of a special design.

As a result, this chair D and the relationship of its channeled upper surface to the bottom of the rail A differs in no material
1148 respect from the relationship that exists between a chair or tie-plate having a perfectly flat upper surface upon which rests the flat bottom of the ordinary railroad rail. Obviously, therefore, the device disclosed in this Hudson patent No. 142,020 does not serve to anticipate or limit any of the claims in controversy of the Wolhaupter patents in suit, and I agree fully with the opinion expressed by Mr. Miller to this effect.

Wells Patent No. 203,570, May 14, 1878.

This patent shows a long heavy "Railway Chair" which is illustrated and described as "adapted to support the joints of railroad rails, and bridge or span two or more sleepers "at such points." It is illustrated as connecting four ties or sleepers, and is obviously of such a thickness and length as to be utterly unsuited for use as a tie-plate even if it were cut down to tie-plate lengths. The rectangular rib E on the under side obviously does not respond to the requirement of claim 8 of the Wolhaupter patent in suit No. 538,809, that the tie-plate shall be "formed on the underside with devices more or less sharpened adapted to penetrate and engage the tie" as the flange E is not sharpened, and is so large that channels or recesses would have to be cut into the upper faces of the ties and

the flanges fitted into said recesses, as they could never be forced in by any possible pressure.

Moreover, they are illustrated as of such size relative to the sleepers that cutting of the sleepers to admit them would weaken the sleepers or ties so that they would be of little value once they were fitted up with this device. It is utterly unfitted both on account of its design and weight for use as a tie-plate, and it would not in my opinion suggest, to say nothing of anticipating, the
1149 inventions defined by the claims in controversy of the Wolhaupter patents in suit. Mr. Miller has discussed the matter so fully in his deposition, that it seems needless to repeat the reasons given by him, and I will therefore say that I agree with the opinions he has expressed relative to the impertinence of the Wells patent for the reasons above set out and for the further reasons given by him in his deposition.

Recess.

Servis Patent No. 249,407, Nov. 8, 1881.

This patent is of interest as disclosing the earliest tie-plate of record in this case. However, it obviously does not disclose or suggest the Wolhaupter tie-plate inasmuch as its upper surface is perfectly flat and accordingly is not provided "on its upper side with a series of flanges on which the rail rests" as provided for by the language of claim 8 of the Wolhaupter patent No. 538,809.

To avoid further reference to this Servis patent, it obviously does not anticipate either of the three claims in controversy of the Wolhaupter patent in suit No. 691,332, inasmuch as all these claims provide that the tie-plate shall be "provided on its upper side with one or more flanges on which the rail may rest or by which it is directly sustained." Similarly, it obviously is not "provided in its rail supporting surface with transverse grooves or channels, and at one margin of said supporting surface with a transverse rail abutting shoulder" as provided for in claims 7 and 9 of the Wolhaupter patent in suit No. 721,644.

Accordingly, the structure of this Servis patent is not and can not be an anticipation for any of the claims in controversy of either of the three Wolhaupter patents in suit. It will also be ap-
1150 parent that the same remarks will apply to each and every plate of the prior art which has the flat bearing or rail supporting surface. Of course the foregoing remarks relative to the disclosure of the original Servis patent No. 249,407 apply just the same to the Reissued Patent No. 10,302 which discloses identically the same structure.

I note that Mr. Carter necessarily agrees with the foregoing conclusions relative to the failure of these Servis patents as anticipations of the Wolhaupter patents in suit, inasmuch as he admits in answer to X Q. 79 that the rail supporting surface of the Servis patents is perfectly flat and unbroken.

Gould Patent No. 280,030, June 26, 1883.

This patent for a "Railroad Rail Cushion and Joint" shows a plate having one or more small grooves *b*, triangular in cross-section, therein and adapted to co-operate with a corresponding number of similarly shaped flanges *a* formed on the bottom of specially designed rails, so that (so far as having any effect in producing flanges or grooves or channels on the upper surface for the purpose of the Wolhaupter patents in suit) these grooves *b* of the Gould patent, even if they were large enough to have any effect, might just as well be omitted for the reason that they co-operate with the correspondingly shaped flanges on the under surface of the rail.

Moreover, where two or more of these grooves *b* are employed, as shown in Figs. 4 and 5, a rubber plate or cushion *f* is interposed between the bottom of the rail and the top of the plate, so that the rail is supported on the cushion, and not on the plate. With this interposed rubber cushion which, under pressure, would accommodate itself to any grooves or depressions or ribs which may be on the under surface of the rail, or the upper surface of the plate,
1151 all these grooves, depressions or ribs are practically nonexistent, even if they were large enough to be material, for the purposes of the flanges and grooves of the Wolhaupter patents in suit.

Owing to the fact, therefore, that these grooves b^1 on the upper surface of the plate of the Gould patent No. 280,030 are either filled by the correspondingly shaped flange on the bottom of the rail, or else are practically nullified by the interposition of a rubber cushion, I consider that for the purposes of the flanges or grooves of the Wolhaupter patents in suit, these grooves *b* of the Gould device may be entirely disregarded and the upper surface of the Gould plate may be considered as practically flat.

Accordingly, it has, in my judgment, no effect as an anticipation of any of the claims in controversy of either of the Wolhaupter patents in suit, for the reasons I noted in my consideration of the Servis patent No. 249,407.

Servis Patent No. 294,816, March 11, 1884.

This is another tie-plate very similar to that shown in the Servis patent No. 249,407, and like the structure of the earlier Servis patent, the upper or bearing surface is perfectly flat and smooth, so that said Servis patent also entirely fails as an anticipation for any of the claims in controversy of the three Wolhaupter patents in suit for the reasons set out in my discussion of the earlier Servis Patent, No. 249,407.

I might say that both of these Servis patents are of much interest in the present controversy for the reason that they are the earliest tie-plates of record, and the fact that they both employ perfectly smooth and flat upper surfaces shows clearly that it was not the obvious thing to do to place flanges or grooves on said upper surface

although such an arrangement had been contemplated be-
1152 fore this time in the railway chair art, which is concerned with the same general question of railway track equipment. For this reason, I should say that the Servis patents indicate the novelty and patentability of the structures of the Wolhaupter patents in suit rather than the opposite.

I note that Mr. Miller agrees with me that these Servis patents do not anticipate the Wolhaupter patents in suit, and I further note that Mr. Carter, in answer to X Q. 83, admits that he "should not consider this patent (Servis, No. 294,816) as in itself anticipating either of the patents in suit." Obviously, this admission would apply equally well to the prior Servis patent No. 249,407 which shows the same flat surface.

Fisher Patent No. 313,067, March 3, 1885.

This patent is for another Rail Joint and not a tie-plate, and obviously has no bearing upon the claims in controversy of either of the Wolhaupter patents in suit, even if it were a tie-plate, for the reason that its rail supporting surface is smooth and flat, and accordingly it necessarily fails as an anticipation for all the reasons noted in connection with the Servis patents, as well as for the further reason that it is not designed as a tie-plate does not have any sharpened ribs or projections on the bottom; and it is rigidly clamped to the rail, as clearly shown in Figs. 1 and 2, so that it will not act as a tie-plate to take the wear caused by the movement of the rail without transmitting it to the ties.

Mr. Miller discusses more at length his reasons for agreeing with my conclusions, and I will refer to them rather than to repeat any of them. I also note that Mr. Carter in his answer to X Q. 90 admits that he does not consider this structure has any special pertinence with refereee to the matters in controversy.

1153 Fisher Patent No. 360,673, April 5, 1887.

This second Fisher patent for a Rail Joint does not differ materially (so far as the present inquiry is concerned) from the structure shown in the Fisher patent No. 313,067, which I have just considered, and fails as a reference for any of the claims in controversy of the Wolhaupter patents in suit for all the reasons which I have set out in connection with my consideration of the prior Fisher patent, and which reasons I need not at this time repeat. The structure of this Fisher Patent No. 360,673 entirely fails as an anticipation for any of the claims in controversy of either of the three Wolhaupter patents in suit.

Trude Patent No. 329,867, Nov. 3, 1885.

This patent for a "Railroad Track Fastening" discloses a sort of a tie-plate A which is adapted to be used in connection with a special clamping device E. Mr. Miller in his testimony discusses the details of construction of the complete device disclosed in this Trude patent and points out the various features wherein it differs from the

devices of the patents in suit, and wherein the device would be objectionable from a practical standpoint. Without stopping to repeat these, it is sufficient to say that the plate A of Figs. 1, 2 and 3, which plate most nearly resembles the tie-plates in controversy, entirely fails as an anticipation for any of the claims in controversy of either of the three Wolhaupter patents in suit for the reason that the rail supporting surface is entirely smooth and flat and has neither flanges nor grooves, as required by the various claims in controversy of the Wolhaupter patents in suit. Defendant's expert, Mr. Carter, in answer to X Q. 95 admits that none of these Trude
1154 devices discloses any close resemblance to the tie-plate illustrated in either of the three Wolhaupter patents in suit.

Currier Patent No. 379,210, March 13, 1888.

This patent shows a peculiar design of a tie-plate that was discussed at length by Mr. Miller who pointed out that it does not anticipate any of the claims in controversy of the three Wolhaupter patents in suit. To show the correctness of this opinion it is only necessary to point out that the rail supporting surface seen in side elevation in Figs. 1 and 4 and in top plan view in Fig. 2 is perfectly smooth and flat, and accordingly cannot be the flanged or grooved surface called for as an essential feature in each and every one of the claims in controversy of the three Wolhaupter patents in suit.

Cote Patent No. 387,399, August 7, 1888.

This patent for a so-called "Railroad Chair" discloses a peculiar one-piece spring-joint intended to make a resilient joint for the abutting rails, as clearly indicated in the drawings. It is obviously not a tie-plate, and is provided with no means for securing it to ties, and so much of its surface as co-operates with the bottom of the rails is flat, and at any rate is not provided either with the flanges of the first and second Wolhaupter patents in suit, or with the transverse grooves of the third Wolhaupter patent in suit. Even defendant's expert, Mr. Carter, admits in answer to X Q. 98 that it is not an anticipation of either of the claims of the Wolhaupter patents in suit.

Ashcroft Patent No. 388,240, Aug. 21, 1888.

This patent for the "Construction of Railroads" seems to have for the primary idea running through all the forms illus-
1155 trated that of cutting a recess or transverse channel in the ties of sufficient width and depth to receive the base of the rail B. In Figs. 1 to 4 no wear-plates are employed in connection with the transverse channels, whereas in Figs. 5 to 8 such plates are employed with smooth bottom and top surfaces. In Figs. 9 to 12, the bottom of the channel is covered by a flat smooth plate and between this flat smooth plate and the bottom of the rail is interposed one or more corrugated plates. These corrugated plates, however, are obviously not the tie-plates of the Wolhaupter patents in suit, but are designed rather as cushions between the wear-plate

and the bottom of the rail. This is set out in the following description from the specification of the Ashcroft patent:

"This provides a somewhat yielding or elastic connection between the rail and the sleeper. I prefer when this construction is employed that there be interposed between the corrugated base or support and the sleeper a flat metal plate, as represented in Fig. 12, and upon which the corrugated base of the chair rests."

If there is any wear or tie-plate about this Ashcroft construction, it would be present either in the "flat metal plate" above described in connection with the structure illustrated in Figs. 9 to 12, or in the flat bearing portion of the structure illustrated in Figs. 5 to 8. Obviously, even if the corrugated support could be considered as a tie-plate, its under surface cannot penetrate the metal plate underneath it, much less the tie beneath the flat metal plate, and if it is a "yielding or elastic connection," its structure and function must be radically different from the flanges of the first and second Wolhaupter patents which are designed to give strength and rigidity to the plate rather than to make it "yielding or elastic."

For the foregoing reasons therefore, I am clearly of the
1156 opinion that this Ashcroft patent does not serve to anticipate or suggest any of the novel structures defined by each of the claims in controversy of the three Wolhaupter patents in suit. For somewhat similar reasons set forth in his testimony, Mr. Miller agrees with the above expressed views.

Davis Patent No. 421,678, Feb. 18, 1890.

This patent has no pertinence whatever except that it is a tie-plate and like each and every one of the tie-plates so far discussed is provided on its upper surface with a perfectly flat and smooth wearing surface for the base of the rail to rest upon, so that it cannot have either the flanges of the first and second Wolhaupter patents in suit, or the grooves of the third Wolhaupter patent, and accordingly cannot serve as an anticipation for any of the claims in controversy of either of the three patents in suit.

I note that Mr. Miller agrees with this view, whereas defendant's expert witness, Mr. Carter, gives it as his opinion that this Davies patent is an anticipation of all the claims of the Wolhaupter patents in suit if they be construed as applicable to defendant's tie-plates inasmuch as the claims in controversy are limited to tie-plates having the bearing surfaces provided with flanges, either rail supporting or rail abutting, or with grooves in the upper surface, or with flanges on the under surface beneath the flanges on the upper surface and adapted to penetrate the ties, and inasmuch as the Davies structures show absolutely none of these limitations and defendant's tie-plate complained of shows all of them, I am at a loss to understand Mr. Carter's position or point of view, unless it is that there can be neither invention nor infringement in this particular art.

1157 If this remarkable point of view is correct, it would seem that the Patent Office is open to grave censure for having allowed any of these numerous tie-plate patents in the record after the

first Servis patent was granted and for holding out to inventors in this art any offer of reward for their efforts in producing the commercially valuable and useful tie-plates which have at any rate supplanted the crude efforts of the earlier inventors in the art.

And thereupon an adjournment was taken to Wednesday, June 29, 1910, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, July 1, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

And thereupon JOHN HOWARD MCELROY resumes his answer to Q. 6.

Goldie Patent No. 426,530, April 29, 1890.

This patent, although the device is called a "Railroad Rail Chair" is nevertheless for a tie-plate and it seems to disclose the earliest efforts of a rather prolific inventor in this particular art. The rail support surface as seen in top plan view in Fig. 1 and in side elevation in Fig. 2 is perfectly smooth and flat, and therefore can have neither the flanges on said rail supporting surface of the first and second Wolhaupter patents in suit nor the grooves or channels of the third Wolhaupter patent in suit and accordingly cannot be held to be an anticipation of any of the claims in controversy.

Moreover, the ribs *p* and *q* on the underside of the plate,
1158 while they are presumably forced into the wood, as illustrated in Figure 2, certainly can not be said to be "more or less sharpened" as provided for by claim 8 of the first Wolhaupter patent and by claim 2 of the second Wolhaupter patent. As there are no flanges on the upper surface, obviously the ribs on the under side of this Goldie tie-plate cannot be the "one or more tie engaging flanges extending parallel with the upper flanges and directly beneath the latter" as called for by all three claims in controversy of the second Wolhaupter patent.

For the foregoing reasons, therefore, I fully agree with the opinion expressed by Major Miller that this patent does not anticipate the claims in controversy of the Wolhaupter patents in suit. I do not see that Mr. Carter anywhere claims that this particular Goldie patent is an anticipation of any of the claims in controversy.

Goldie Patent No. 457,584, Aug. 11, 1891.

So far as the record shows this is Mr. Goldie's second attempt to produce a commercially successful railroad tie-plate, and in it he retains the same smooth rail bearing surface that is found in his earlier patent No. 426,530, and consequently it fails as an anticipation of any of the claims in controversy for all the reasons I set out in my consideration of the prior Goldie patent except upon the minor point that Goldie, in this second patent, shows the sharpened

triangular projections *i* which are adapted to penetrate the tie. I note, however, that in his later patent No. 540,356, he discusses certain objections to the form of tie-plate shown in this patent No. 457,584, which objections serve to make it impractical.

As Mr. Miller has discussed this matter at length, I will not refer to it further except to say that I fully agree with the opinion
1159 that he has expressed as to the impracticability of this tie-plate of the Goldie patent No. 457,584 and that it entirely fails as an anticipation for any of the claims in controversy of either of the Wolhaupter patents in suit. I do not understand that Mr. Carter, defendant's expert, claims that this Goldie patent is an anticipation of any of the claims in controversy.

Goldie Patent No. 457,585, Aug. 11, 1891.

This patent, which is a companion to the one just discussed, shows a tie-plate structure which, so far as the present controversy is concerned, may be considered as practically identical with that shown in the companion patent No. 457,584, in combination with a rail brace member. This additional element of course, which is no part of the tie-plate structure, adds nothing to its pertinence as a reference, and it fails as an anticipation for any of the claims in controversy of all the Wolhaupter patents in suit, for the same reasons as the companion patent No. 457,584. Accordingly, I fully agree with the opinion expressed by Mr. Miller, to the effect that there is nothing in this Goldie patent to serve as an anticipation of the claims in controversy of the Wolhaupter patents in suit. I do not understand from Mr. Carter's testimony that he considered that this patent is an anticipation of any of the claims in controversy of the Wolhaupter patents in suit.

Kennish Patent No. 462,357, Nov. 3, 1891.

This patent is for a "Protecter for the Ends of Beams" and obviously has nothing to do with tie-plates, which was substantially admitted by Mr. Carter, defendant's expert, and accordingly it is only necessary to state that I agree with the opinion that he must necessarily hold and that Mr. Miller expressed to the effect that
1160 there is nothing about this Kennish patent that serves in the slightest to suggest or anticipate the novel structures defined by the claims in controversy of the three Wolhaupter patents in suit.

Dockstader Patent No. 462,399, Nov. 3, 1891.

This patent discloses what he calls a "Lock Rail Joint," and it consists of a heavy railroad chair combined with fillers E and locking springs F, all co-operating so that the chair will be rigidly secured to the ends of the rails which it joins, so that instead of being arranged to have the rail move on it to prevent wear between the rail and the tie, it would be rigidly secured to the rail and would cause wear between the chair and the tie, which would be fully as destructive as wear directly between the rail and the tie. It obviously

is not a tie-plate for the reasons set out by Mr. Miller and as admitted by Mr. Carter in his cross-examination, and accordingly is not an anticipation for any of the claims in controversy of either of the three Wolhaupter patents in suit.

Parsons Patent No. 465,492, Dec., 1891.

This patent shows a device intended for a tie-plate, which is described as being made of sheet metal. As will be noted from the two views the rail supporting surface is perfectly flat, and consequently cannot have either the rail supporting flanges of the first and second Wolhaupter patents in suit or the grooves or channels of the third Wolhaupter patent in suit, and accordingly is not an anticipation for any of the claims in controversy of either of the three Wolhaupter patents in suit. I do not see that Mr. Carter claims that this structure is an anticipation of any of the claims in controversy of either of the patents in suit, and Mr. Miller positively agrees with the opinion I have expressed on this matter.

1161 Dunham Patent No. 469,386, Feb. 23, 1892.

This Dunham patent shows what impresses me as a purely theoretical device inasmuch as he describes as his preferred form a corrugated plate in which the corrugations are provided to make a stronger plate than could be secured with the same weight of metal if it were perfectly flat. Judging from the shape of the corrugations and the proportions of the parts, I should say that the object would not be attained for the reason that with the corrugations of the shape shown, the plate would flatten out unless it was made so very heavy that it would be fully as heavy for the same area, if not heavier, than a flat plate, which would offer the same support. Then too, the plate is not provided on its under side "with devices more or less sharpened adapted to penetrate and engage the tie," as called for by the claim in controversy of the first Wolhaupter patent in suit.

The under surfaces of this Dunham structure, rounded to a semicircle, certainly are not sharpened in any sense of the word, and would not penetrate the tie, although of course it will be understood that the form shown in Fig. 4 might be forced into the tie if sufficient power were applied. But this device of Fig. 4 forced into the tie would not have either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents, or the grooves and channels in the rail supporting surface of the claims in controversy of the third Wolhaupter patent in suit. And if the corrugated structure of Figs. 1 and 2 would be properly called flanges (and this would in my opinion be entirely contrary to any known usage) the flanges in that case on the top and bottom of the plate would not be in the same vertical plane, as required by all the claims in controversy of the second Wolhaupter patent.

1162 Furthermore, if the corrugations of the form shown in Figures 1 and 2 of this Dunham patent could be properly

called grooves or channels in the rail supporting surface, which designation, in my opinion, would be incorrect, then said grooves or channels are not transverse to the tie, as called for by the claims in controversy of the third Wolhaupter patent in suit. Accordingly, for the foregoing reasons, I am clearly of the opinion that this Dunham patent does not serve as an anticipation for any of the claims in controversy of either of the three Wolhaupter patents in suit, and my opinion in this respect is confirmed by Mr. Miller who presents somewhat similar reasons for his same opinion.

Heath Patent No. 474,129, May 3, 1892.

This patent for a "Rail Joint" entirely fails as an anticipation not only because it shows a rail joint that is rigidly fastened to the ends of two rails and extends from one tie to another, and so is not in any sense a tie-plate, but also for the further reasons that its rail supporting surface, as well as the surfaces resting on the ties, are flat and smooth, and consequently cannot have the rail supporting flanges on the upper surface of the first and second Wolhaupter patents in suit, or the grooves or channels in the rail supporting surface of the third Wolhaupter patent, to say nothing of the sharpened devices on the under surface called for by the first Wolhaupter patent and the flanges on the under surface called for by the second Wolhaupter patent.

For these reasons therefore I am clearly of the opinion that this Heath patent entirely fails as an anticipation for any of the claims in controversy of either of the three Wolhaupter patents in suit, and my opinion in this respect coincides with that of Mr. Miller,
1163 and I do not understand that Mr. Carter claims that this Heath patent is an anticipation of any of the claims in controversy.

Hane Patent No. 481,171, Aug. 23, 1892.

This is another Rail Joint patent, and so far as its relationship to the devices of the Wolhaupter patents in suit is concerned, it may be said to be identical with the Heath Rail Joint Patent which I have just discussed and accordingly it fails as an anticipation for all the reasons I have set out in the discussion of said Heath patent. Mr. Miller agrees with this opinion, and Mr. Carter, defendant's expert, admits in answer to X Q. 118 that it has "no particular bearing" on the Wolhaupter patents in suit.

Goldie Patent No. 485,030, Oct. 25, 1892.

This patent seems to illustrate at least the fourth attempt of a rather prolific inventor in this art to produce a tie-plate that would be practical, and the essentially novel idea of this Goldie structure was the rolling of a slight curve in the center of the plate extending beneath the center of the line of the rail, the object being to prevent the buckling which Mr. Goldie had found was caused in the flat

plates of his prior patents by the action of the slightly convexed center of the base of the rail.

His theory was that by forming a curve in the body of the tie-plate so as to present a concavity opposite the convex portion of the rail bottom, the pressure of the rail caused by the loads passing over it would cause the concave surface on the tie-plate and the convex surface on the rail to accommodate themselves to each other without causing the plate as a whole to buckle and thus lift the outer edges marked 3 in Fig. 2 from the track, and thus reduce the bearing surface of the tie-plate on the tie. I am of the opinion that
1164 his theory in the matter was an incorrect one, as it strikes me that the lack of a support directly beneath the flange of the rail would do more damage in distorting the rail than there would be advantage in the possible prevention of a buckling of the plate.

I may say that after the rail was in place, the two opposed surfaces would approximate each other to such an extent that there would be practically no channel between the rail and the tie-plate, assuming of course that the original depression in the tie-plate was only so much as was necessary to accommodate the convexity of the rail. The amount of this concavity is doubtless very much exaggerated in the patent drawings, so as to make it perfectly obvious and apparent.

This exaggeration in the patent drawings is indicated by "Defendant's Exhibits B and C," which are obviously tie-plates made in accordance with the disclosure of this Goldie patent No. 485,030. If we look at "Defendant's Exhibit B," we see that the plate was in use for some considerable length of time as is shown by the fact that the rail has cut into the plate to some considerable extent. We also see that the concavity on the upper surface and the corresponding convexity on the lower surface is quite slight, and very much less than that indicated by the patent drawings. It will also be noted that the ends of the rail supporting surface are practically flat, so that in use, instead of there being a channel or groove beneath the bottom of the rail and in the top of the tie-plate, there was at best merely a very shallow pocket in the upper surface of the tie-plate.

It will also be seen that this plate has buckled very materially so that its edges would be lifted off of the tie, unless the plate as a whole was sunk into the tie, so that it would not have the large wearing surface intended, and that as a matter of fact the actual wear-
1165 ing surface of the plate thus buckled is but slightly greater than would have been the wearing surface of the rail itself if it had been placed directly on the tie.

Much the same state of facts is seen to exist in "Defendant's Exhibit C," which, however, is not buckled so much, presumably because it had not been in use nearly so long as is indicated by the fact that the rail has cut no grooves in its upper surface, but merely polished the bearing surface off. It will also be noted that the ends of the bearing surface are practically flat, so that the concavity is that of a pocket, rather than a channel, and being closed at its ends, does not have either of the functions of the grooves or channels of the third Wolhaupter patent in suit, i. e., it does not lighten the weight inasmuch as the concavity in the top and corresponding con-

vexity in the bottom does not lessen the thickness of the plate; nor does it present a channel, or rather channels, extending the entire length of the plate beneath the rail and permitting the passage of air, water, sand, etc.

For the foregoing reasons therefore, it is obvious that so far as the purposes of the three Wolhaupter patents in suit are concerned, the tie-plate of this Goldie patent No. 485,030 might just as well be flat, like the tie-plates of his earlier patents, and that accordingly, this Goldie patent under discussion cannot be an anticipation of any of the claims in controversy of the three Wolhaupter patents in suit, inasmuch as it does not have either the rail supporting flanges on the upper surface, which flanges are called for by the claims in controversy of the first and second Wolhaupter patents in suit, or the channels or grooves in said rail supporting surface of the third Wolhaupter patent in suit.

For the reasons which Mr. Miller has set out in his consideration of this patent, he agrees with the conclusion which I have
1166 reached as to this Goldie patent failing as an anticipation for any of the claims in controversy.

Reece Patent No. 488,662, Dec. 27, 1892.

This patent shows what I judge to be a commercially impractical tie-plate which entirely fails as an anticipation of any of the claims in controversy for the reason that the rail supporting surface *a*, while inclined as a whole, is nevertheless perfectly flat and smooth and accordingly cannot have either the rail supporting flanges called for by the claims in controversy of the first and second Wolhaupter patents in suit, or the transverse channels or grooves in the rail supporting surface called for by the claims in controversy of the third Wolhaupter patent in suit. Mr. Miller agrees with me that this Reece patent entirely fails as an anticipation and I do not understand that Mr. Carter claims that it anticipates any of the claims in controversy.

Recess.

Churchward Patent No. 492,528, Feb. 28, 1893.

This patent, which is for a tie-plate, is not pertinent as an anticipation of any of the claims in controversy of the three Wolhaupter patents in suit for the reason that the rail supporting surface as seen in side elevation in Fig. 1 and in perspective in Fig. 2, is plain and flat, and accordingly it cannot have the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels of the claims in controversy of the third Wolhaupter patent in suit. Accordingly it, like all the other tie-plates having plain rail supporting surfaces, cannot be considered an anticipation of any of the claims in controversy and I note
1167 that Mr. Miller agrees with my opinion to this effect for the same reasons. I do not understand that Mr. Carter contends that this Churchward patent is an anticipation of the Wolhaupter patents in suit.

Reece Patent No. 494,692, April 4, 1893.

This patent discloses a tie-plate fully described in Mr. Miller's testimony in which there are three separate flat rail supporting surfaces, the main support being the central rectangular portion shown in Fig. 2, and the supplemental supports being the narrower surfaces over the tops of the outer flanges *t*. This smooth rail supporting surface obviously cannot have the rail supporting flanges demanded by the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels in the rail supporting surface of the third Wolhaupter patent in suit, and Mr. Miller agrees with my conclusion that for this reason this Reece patent entirely fails as an anticipation for any of the claims in controversy of either of the three Wolhaupter patents in suit.

Mr. Carter takes the extraordinary position that the three entirely distinct and separate supporting surfaces are in themselves flanges or grooves or channels, but obviously this is giving to these terms an unheard of application, as flanges evidently arise above or are projected from the main body of a surface or element, and can not be considered as formed in a surface merely by cutting away complete sections of a body of which the surface forms one boundary. The ribs *t* projecting from the under surface of this Reece Tie-Plate might properly be called flanges, but they are on the wrong side of the plate, and obviously are not rail supporting in their function but merely tie-penetrating. Accordingly I can not possibly agree with
1168 the opinion expressed by Mr. Carter as to the pertinence of this Reece patent No. 494,692.

Holmes Patent No. 495,807, April 18, 1893.

This patent discloses a tie-plate which, so far as the merits of the present controversy are concerned, may be considered to be identical with that of the Reece Patent No. 494,692, which I have just discussed, and, inasmuch as it too has a perfectly plain and smooth rail supporting surface, it entirely fails as an anticipation for all the claims in controversy of all three Wolhaupter patents in suit for the reasons I set out in my discussion of said Reece Patent No. 494,692.

Mr. Miller agrees with this opinion and I do not understand that Mr. Carter seriously contends that this Holmes patent has any pertinence as an anticipation.

Worthington Patent No. 506,963, Oct. 17, 1893.

This patent, for a Method of Making Railway Tie-Plates, discloses a tie-plate structure which, for the purposes of the present controversy, may be considered to be substantially identical with the structures of the Reece Patent No. 494,692, and the Holmes Patent No. 495,807, which I have just considered, and it entirely fails as an anticipation for the same reasons: i. e., because the rail supporting surface, as shown in Fig. 2, is perfectly smooth and flat, and consequently can not have the rail supporting flanges thereon of the claims in controversy of the first and second Wolhaupter patents, or

the grooves or channels of the claims in controversy of the third Wolhaupter patent. Mr. Miller agrees with this opinion for the same reasons and I do not understand that Mr. Carter contends that this particular patent is an anticipation of any of the claims in controversy.

1169 Churchward Patent No. 508,086, Nov. 7, 1893.

This patent, while it shows two rail abutting flanges to hold the rail in place, has a perfectly flat and smooth rail supporting surface, so that it can not possibly have the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels in the rail supporting surface of the claims in controversy of the third Wolhaupter patent in suit. Accordingly it can not be an anticipation of any of the claims in controversy, and Mr. Miller agrees with this opinion for the same reasons. I do not understand that Mr. Carter contends that this Churchward patent is an anticipation for any of the claims in controversy.

Holmes Patent No. 514,465, Feb. 13, 1894.

This patent shows a peculiar and in my judgment commercially impracticable device in which the tie-plate is made in two parts adapted to interlock and be secured to each other and to the tie and rail by the customary spikes. The rail supporting surface shown in Fig. 1 is flat and smooth, but portions of it are entirely cut away, as seen at *d* in the inverted perspective view constituting Fig. 2 of the drawings. Obviously, this smooth rail supporting surface does not have either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the transverse grooves or channels of the claims in controversy of the third Wolhaupter patent in suit. Accordingly, even if it were a one-piece tie-plate, it would not, in my opinion, constitute an anticipation of any of the claims in controversy of either of the three Wolhaupter patents in suit, and Mr. Miller agrees with this opinion for the same reasons. I do not see that Mr. Carter anywhere urges that this patent is an anticipation for any of the claims in controversy.

1170 Holmes Patent No. 514,466, Feb. 13, 1894.
Holmes Patent No. 514,467, Feb. 13, 1894.

I have grouped these two Holmes patents together for the reason that so far as the questions in controversy are concerned, the structures of the two patents may be considered to be identical. In both cases, while the upper surface is provided with rail abutting projections or flanges to prevent the lateral displacement of the rail, the rail supporting surfaces are perfectly flat and smooth, and accordingly cannot have either the rail supporting flanges called for by the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels in the rail supporting surface called for by the claims in controversy of the third Wolhaupter patent in suit. Mr. Miller agrees with me that these patents fail as

anticipations for the same reasons and I do not see from his testimony that Mr. Carter contends that they anticipate any of the claims in controversy.

Harris Patent No. 514,828, Feb. 13, 1894.

This is another tie-plate showing the rail abutting flanges or projections O but having the perfectly smooth and flat rail supporting surface so that it can not have either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels in the rail supporting surface of the claims in controversy of the third Wolhaupter patent in suit. Mr. Miller agrees with my opinion as to the lack of anticipation by this patent to Harris.

Wilson Patent No. 522,867, July 10, 1894.

This is a peculiar structure, made in three parts and requiring in addition two spikes, making it a commercially impractical de-
1171 vice, as well as practically undesirable for the reason that any two or three-part structure placed in the position a railway tie-plate occupies and subjected to the constantly varying loads and strains cannot possibly have a tithe of a durability that a one-piece structure would have. The plate proper, shown in two different forms in Figs. 3 to 6, is provided with channels in its upper surface, the two outer channels being adapted to receive "guard devices B" which have the function of furnishing the rail abutting shoulders *b* to hold the rails from lateral displacement, as well as the prongs b^2 which pass through the apertures a^3 in the tie-plate and into the tie. The function of the inner channels seem to be to determine the location of the spikes which pass through the apertures *a* in the tie-plate and into the tie and the heads of which overhang the flanges of the rail to prevent its being raised vertically off of the track.

It will be apparent that this radically different structure does not respond to the language of any of the claims in controversy of the three Wolhaupter patents in suit, inasmuch as it is not "formed on the under side with devices more or less sharpened adapted to penetrate and engage the tie" as called for by the claim in controversy of the first Wolhaupter patent in suit, inasmuch as the tie penetrating devices of the Wilson patent are the "guard devices B." This Wilson structure or tie-plate is not provided "on the under side with one or more tie engaging flanges extending parallel with the upper flanges and directly beneath the latter" as demanded by all three of the claims in controversy of the second Wolhaupter patent in suit.

Moreover, it does not have "an additional flange or flanges extending above the plane of the rail sustaining flanges and adapted to receive the lateral thrust of the rail" as required by the third claim of the second Wolhaupter patent, the corresponding flanges
1172 *b* of this Wilson device being formed on the independent "separate guard devices B" which form no part of the tie-plate proper. Finally, this Wilson tie-plate is not "provided in its

rail supporting surface with transverse grooves or channels, and at one margin of said supporting surface with a transverse rail abutting shoulder," as required by both the claims in controversy of the third Wolhaupter patent in suit. I note that Mr. Miller agrees with my views that this Wilson patent fails as an anticipation of any of the claims in controversy of the Wolhaupter patents in suit, and I do not see that Mr. Carter anywhere suggests or urges that it is an anticipation.

Servis Patent No. 524,868, Aug. 21, 1894.

It seems from this patent that, after a long interval, the earliest patentee of tie-plates in this record, Mr. David Servis, reappears as an inventor in the art, and discloses a tie-plate structure which differs from those of his early patents mainly in the fact that he has added the rail abutting flanges b^2 b^3 and changed the size and location of the tie penetrating ribs or flanges. And he still retains the perfectly smooth and flat rail supporting surfaces, it is obvious that this later Servis patent fails as an anticipation for any of the claims in controversy inasmuch as it entirely lacks the rail supporting flanges called for by the claims in controversy of the first and second Wolhaupter patents in suit, and the channels or grooves in the rail supporting surface called for by the claims in controversy of the third Wolhaupter patent in suit. I note that Mr. Miller agrees with the foregoing opinion.

1173 Clark Patent No. 529,854, Nov. 27, 1894.

This is another one of the numerous tie-plate patents of the prior art which, as seen in Figs. 1 and 3, has a perfectly plain and smooth rail supporting surface so that it can not have either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels in the rail supporting surface of the claims in controversy of the third Wolhaupter patent in suit. Accordingly, I am necessarily of the opinion that this patent entirely fails as an anticipation of any of the claims in controversy of either of the three Wolhaupter patents in suit, and for the same reasons, Mr. Miller agrees with this opinion. I do not see that defendant's expert, Mr. Carter, contends that this Clark patent is an anticipation of any of the claims in controversy.

Gabel Patent No. 530,175, Dec. 4, 1894.

This patent discloses another freak construction for producing a tie-plate having tie penetrating flanges on its under surface and rail abutting shoulders on its upper surface. However, the fact that it is commercially impracticable may be overlooked in view of the more serious defect that its rail supporting surface is perfectly smooth and flat, so that it can not possibly have either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels in

the rail supporting surface of the claims in controversy of the third Wolhaupter patent in suit. Accordingly, it entirely fails as an anticipation for any of the claims in controversy and Mr. Miller agrees with this view, and I do not see that defendant's expert, Mr. Carter, contends that it anticipates any of the claims in controversy.

1174 Wolhaupter Patent No. 530,738, Dec. 11, 1894.

This patent seems to illustrate an attempt by the patentee of the patents in suit to produce a tie-plate and the patent illustrates several forms, but in every case the rail supporting surface is perfectly flat and smooth so that this patent necessarily fails as a disclosure of any tie-plate having either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the channels or grooves in the rail supporting surface of the third Wolhaupter patent in suit. Accordingly, it entirely fails as an anticipation of any of the claims in controversy, and Mr. Miller agrees with this opinion, and I do not find that de fendant's expert, Mr. Carter, urges that this Wolhaupter patent anticipates any of the claims in controversy.

Morrell Patent No. 531,637, Jan. 1, 1895.

This is another tie-plate which, while provided on its under surface with tie-penetrating lugs or flanges and on its upper surface with rail abutting flanges to prevent the lateral displacement of the rails, nevertheless has a perfectly flat and smooth rail supporting surface so that it can not possibly have either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels in the rail supporting surface of the claims in controversy of the third Wolhaupter patent in suit. Accordingly it fails as an anticipation for any of the claims in controversy for these reasons, and Mr. Miller agrees with this view of this Morrell patent.

Stewart Patent No. 535,963, March 19, 1895.

This is still another patent that discloses a tie-plate having
1175 ribs or flanges on its under surface intended to be forced into the tie and on its upper surface with rail abutting shoulders to prevent lateral displacement of the rails, but nevertheless employing the same perfectly flat and smooth rail supporting surface which the inventors, prior to Wolhaupter, seemed to have considered essential. Accordingly, this Stewart tie-plate cannot have either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels in the rail supporting surface of the third Wolhaupter patent in suit, and consequently it fails as an anticipation for any of the claims in controversy for this reason. I note that Mr. Miller agrees with this view of the failure of the Stewart patent as an anticipation for the same reason.

Wolhaupter Patent No. 538,808, May 7, 1895.

This is still another Wolhaupter patent prior in its filing date to the filing dates of any of the three patents in suit, and while it shows tie penetrating ribs or flanges on its under surface, and rail abutting flanges on its upper surface to prevent any possible lateral displacement of the rail, it still employs the same perfectly flat and smooth rail supporting surface, so that it can not have either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels in the rail supporting surface of the claims in controversy of the third Wolhaupter patent in suit, and accordingly it fails as an anticipation of any of the claims in controversy of his patents in suit. Mr. Miller agrees with this conclusion for the same reasons, and I note that defendant's expert, Mr. Carter, does not urge that this Wolhaupter patent is an anticipation of any of the claims in controversy of the three Wolhaupter patents in suit.

This concludes my consideration of such patents of the
1176 prior art as were discussed by Mr. Miller that are early enough in date to be considered in connection with the question of anticipation of the first Wolhaupter patent in suit, and I find that in the case of every one of these patents, for some reason or reasons, each and every one of them, fails as an anticipation for any of the claims in controversy of either of the three Wolhaupter patents in suit. The later patents of course will only have to be considered with the second and third Wolhaupter patents in suit.

Chamberlin Patent No. 538,817, May 7, 1895.

This is another tie-plate patent having tie penetrating flanges or ribs on its under surface and rail abutting flanges or ridges on its upper surface, but a perfectly flat and smooth rail supporting surface, so that it can not possibly have either the rail supporting flanges of the claims in controversy of the second Wolhaupter patent in suit or the grooves or channels in the rail supporting surface of the third Wolhaupter patent in suit. Accordingly, it has no pertinence as an anticipation of either of the Wolhaupter patents in suit. Mr. Miller agrees with this view, and I do not find that Mr. Carter contends that this Chamberlin patent anticipates any of the claims in controversy.

Goldie Patent No. 540,356, June 4, 1895.

This patent discloses a tie-plate which, for the purposes of the present inquiry, is practically identical with that shown in his earlier patent No. 485,030 which I discussed at length, and this latest Goldie patent, for all the reasons that I set out in my discussion of the earlier Goldie patent, entirely fails as an anticipation for any of the claims in controversy of either of the three Wolhaupter patents in suit. Mr. Miller agrees with the foregoing
1177 opinion as to the lack of pertinence of this Goldie patent No. 540,356, as an anticipation for any of the claims in controversy of any of the Wolhaupter patents in suit.

And thereupon an adjournment was taken to Saturday morning at 10:30 a. m., July 2, 1910.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, July 2, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

Mr. MCELROY resumes his answer to Q. 6.

Reece Patent No. 541,984, July 2, 1895.

This patent was granted on an application filed March 23, 1895, subsequent to the filing date of the application of the first Wolhaupter patent in suit, so that it could not properly be considered as a reference for this first Wolhaupter patent even if it were pertinent. However, this Reece patent shows a tie-plate in which the upper surface is perfectly flat and smooth, and consequently entirely lacks the rail supporting flanges of the first and second Wolhaupter patents in suit and also the grooves or channels of the third Wolhaupter patent in suit, so that it is not an anticipation of any of the claims in controversy of any of the patents sued on. Mr. Miller agrees with this opinion as to its failure of being an anticipation for any of the claims in controversy, and I do not find that Mr. Carter anywhere contends that it is an anticipation of any of said claims.

1178 Quincy Patent No. 542,352, July 9, 1895.

This patent for a combined tie-plate and rail-brace shows a tie-plate substantially like that of the Reece patent No. 541,984 just considered, except that he strikes up a portion 3 of the body of the tie-plate to form a rail brace operating in the manner indicated in Fig. 1. This, however, does not change the perfectly flat and smooth character of the rail supporting surface, so that this Quincy patent can not be an anticipation for any of the claims in controversy, as it cannot have either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels in the rail supporting surface of the claims in controversy of the third Wolhaupter patent in suit. Mr. Miller agrees with this view, and I do not find that Mr. Carter, defendant's expert, has urged that this patent anticipates any of the claims in controversy.

Wolhaupter Patent No. 542,787, July 16, 1895.

This patent filed at the same time as the first Wolhaupter patent in suit, obviously could not be an anticipation, even if it showed the same construction. While it has a single rail supporting flange C, shown in Fig. 4, this rail supporting flange is not above the tie penetrating flanges, so that this Wolhaupter patent No. 542,787,

has no bearing whatever on the claims in controversy of the second Wolhaupter patent in suit, and it of course does not have the transverse channels or grooves in the rail supporting surface of the third Wolhaupter patent in suit. Accordingly it entirely fails as an anticipation for any of the claims in controversy, and I may note that Mr. Miller agrees with this opinion, and Mr. Carter has not contended that this Wolhaupter patent No. 542,787 is an anticipation of the claims in controversy of either of the Wolhaupter patents in suit.

1179 Weed Patent No. 566,828, Sept. 1, 1896.

This is another patent too late to have any bearing on the first Wolhaupter patent in suit and, moreover, having a perfectly flat and smooth rail supporting surface so that it cannot be an anticipation for the claims in controversy of the second and third Wolhaupter patents in suit inasmuch as it has neither the rail supporting flanges or the tie penetrating flanges of the second Wolhaupter patent in suit, nor the grooves or channels in the rail supporting surface of the third Wolhaupter patent in suit. It has no pertinence as an anticipation of any of the claims in controversy and Mr. Miller agrees with this opinion.

Sellers Patent No. 573,543, Dec. 22, 1896.

This is another tie-plate patent too late to have any bearing on the first Wolhaupter patent in suit, and having a perfectly flat and smooth rail supporting surface so that it has no bearing as an anticipation on the second and third Wolhaupter patents in suit inasmuch as it can not have the rail supporting flanges of the second Wolhaupter patent, or the channels or grooves in the rail supporting surface of the third Wolhaupter patent in suit. Mr. Miller agrees with this opinion and I do not find that Mr. Carter contends that this patent is an anticipation for any of the claims in controversy.

Avery Patent No. 574,733, Jan. 5, 1897.

This is a rather peculiar construction, too late to have any bearing on the first Wolhaupter patent in suit, and evidently a carrying forward of the essential idea of the Dunham patent No. 469,386, inasmuch as Avery also proposes to use a plate "of very thin metal" and to increase the rigidity of the plate he stamps up the
1180 raised portions D from the body of the plate. These raised portions being stamped up from the body of the plate are obviously not the flanges of the second Wolhaupter patent in suit, and even if they could be considered the flanges, it would not have the tie penetrating flanges directly beneath the rail supporting flanges as called for by the claims in controversy of the second Wolhaupter patent in suit.

Moreover, these raised surfaces are connected by the raised portions c^1, so that there could not possibly be said to be any grooves or channels across the rail supporting surface, as the space between the tops of the struck up portions B are at best merely pockets, and

moreover, if they could be considered as grooves or channels, they are not transverse, as called for by the claims in controversy of the third Wolhaupter patent in suit. Accordingly, this Avery patent, in my opinion, for the foregoing reasons entirely fails as an anticipation for any of the claims in controversy of any of the Wolhaupter patents in suit, and I may note that Mr. Miller agrees with this opinion. I do not find that Mr. Carter contends that this Avery patent anticipates any of the claims in controversy.

Wolhaupter Patent No. 579,509, March 23, 1897.

This patent is too late to be a reference for the first Wolhaupter patent in suit, and in my opinion entirely fails as an anticipation for any of the claims in controversy of the second and third Wolhaupter patents in suit. The structure shown in Figs. 1 and 2 is the least impertinent, and it obviously does not have the rail supporting flanges of the second Wolhaupter patent in suit, and if the rail supporting surfaces could be considered as flanges and the tie penetrating prongs E could be considered as flanges, then the tie-
1181 penetrating flanges would not be beneath the rail supporting flanges, as provided for by the claims in controversy of the second Wolhaupter patent in suit. With reference to the third Wolhaupter patent in suit, there is one wide and rather deep groove or channel in the rail supporting surface, but this single wide and rather deep channel is obviously not the plurality of shallow channels of the third Wolhaupter patent in suit, inasmuch as the plurality of shallow channels does not seriously weaken the tie-plate, and, moreover, furnishes a support for the rail directly beneath the vertical flange where the support is so much needed.

For the foregoing reasons, therefore, I am of the opinion that this Wolhaupter patent No. 579,509 fails as an anticipation of any of the claims in controversy of either of the Wolhaupter patents in suit. I note that Mr. Miller agrees with the opinion that I have expressed as to the failure of this Wolhaupter patent No. 579,509 to anticipate any of the claims in controversy of the Wolhaupter patents in suit.

Tillinghast Patent No. 584,248, June 8, 1897.

This patent for a "Track Fastening" shows a theoretical device that in my opinion would be valueless and does not have the necessary requisites of a tie-plate. As seen in the various figures, the plate proper is provided with the side ribs 5 which are described as having "blunt lower edges whereby they are adapted to support the body of the plate above the upper face of the cross-tie." It is obvious that these ribs with their blunt lower edges are not the sharpened ribs or flanges of the second Wolhaupter patent in suit which are intended to penetrate the tie until the body of the tie-plate rests upon the top of the tie. All the drawings, Figs. 1 to 4, which show relative positions of the plates and the ties, show that the bottom of the plate is above the top of the tie, so that the ribs do
1182 not penetrate the tie as demanded by the disclosure of the second Wolhaupter patent and as provided by the terms of

the claims thereof in controversy. Moreover, the rails instead of being supported on the tops of the flanges are seated in the recesses 6 cut out of the body of the flanges or ribs.

Moreover, as this Tillinghast device is designed, it would have rather a rail joint than a tie-plate action, inasmuch, as is clearly shown in Figs. 1, 2, 4 and 6, the plates are adapted to be firmly secured by the bolts 9 and the clamping members 7 to the rail so that the vertical movement of the rail under the stress of the load, or the "wave motion" as it is sometimes called, would tend to cause the plate to pound upon the tie, so that the wear would be on the tie, and not on the plate, as is the case of a true tie-plate.

Accordingly, for the foregoing reasons, I am clearly of the opinion that this Tillinghast patent does not embody the invention defined by the claims in controversy of the second Wolhaupter patent in suit, and it obviously has no bearing on the third Wolhaupter patent in suit inasmuch as there are no transverse grooves in the rail supporting surface, such as are demanded by the claims in controversy of the third Wolhaupter patent. I note that Mr. Miller agrees with me that this Tillinghast patent does not serve as an anticipation for the Wolhaupter patents in suit for the same reasons that I have set out.

Richards Patent No. 584,603, June 15, 1897.

This is another patent disclosing a plate adapted to be used as a tie-plate, as shown in Fig. 1, or as a railroad chair, as shown in Fig. 3. It has no pertinence with reference to the Wolhaupter patents in suit inasmuch as it has the smooth and flat rail supporting surface, and consequently can not have the rail support-
1183 ing flanges of the claims in controversy of the first and second Wolhaupter patents in suit or the grooves or channels in the rail supporting surface of the claims in controversy of the third Wolhaupter patent in suit. Accordingly, it is not an anticipation of any of the claims in controversy of any of the Wolhaupter patents in suit, and I note that Mr. Miller agrees with this opinion.

And thereupon an adjournment was taken to Wednesday, July 6, 1910, at 10.30 a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, July 6, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

Mr. MCELROY continues his answer to Q. 6.

Cloud Patent No. 592,865, November 2, 1897.

This patent, for a "Rail Joint," is obviously not a tie-plate, and the nearest approach to anything resembling a tie-plate is the bridge-piece shown in four different forms in Figs. 3, 4, 7 and 10.

This bridge-piece spans the ties between which the joint is located, and in every case it will be noted that the rail supporting surface is perfectly flat and smooth, so that it would have no bearing on any of the Wolhaupter patents in suit, even if it were a tie-plate, for the reason that it cannot possibly have either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the transverse grooves or channels in said rail supporting surface of the claims in controversy of the third Wolhaupter patent in suit. Mr. Miller agrees with the opinion
1184 that I have expressed as to the impertinence of this Cloud patent, and I do not find that Mr. Carter anywhere contends that it is an anticipation of any of the claims in controversy.

Harris Patent No. 603,563, May 3, 1898.

This patent is so late in date that it has no possible bearing on any of the Wolhaupter patents in suit except the third, and it obviously entirely fails as an anticipation of either of the claims in controversy for the reason that, as seen in Figs. 3, 4 and 7 to 9, the rail supporting surface B is perfectly smooth and flat and consequently has neither the transverse channels or grooves in said surface, nor the transverse rail abutting shoulder adjacent thereto, which flanges and shoulders are essential features of the aforesaid claims in controversy. Accordingly it cannot be an anticipation of any of the claims and I note that Mr. Miller agrees with this opinion.

Goldie Patent No. 610,179, Sept. 6, 1898.

This patent, which is of too late a date to have any bearing on any of the Wolhaupter patents in suit except the third, shows a tie-plate which fails to anticipate either of the claims in controversy, the 7th and the 9th of said patents for two reasons: in the first place it has no transverse grooves or channels in the rail supporting surface, and consequently this Goldie tie-plate does not utilize the force of the suction of the passing train to clear the grooves of the plates of sand and dust, while at the same time covering them by the rail so as to protect them from the elements and from brine which may drop from the passing cars. In the second place, it has no transverse rail abutting shoulder to receive lateral thrust of the rail, and consequently the spikes alone have to take this thrust with the result that they would have their heads cut off
1185 or cut into so as to loosen the rail to a dangerous extent much sooner than could possibly occur if the rail abutting shoulder of the third Wolhaupter patent in suit were employed.

For the foregoing reasons therefore I am of the opinion that this Goldie patent fails as an anticipation for claims 7 and 9 of the third Wolhaupter patent in suit, and I note that Mr. Miller agrees with this view.

Morrison Patent No. 622,965, April 11th, 1899.

This is a tie-plate patent too late in date for any but the third Wolhaupter patent in suit, and it entirely fails as an anticipation

for either claims 7 or 9 thereof for the reason that its perfectly flat and smooth rail supporting surface is not provided with channels or grooves of any sort, to say nothing of their being transverse, and for the further reason that it has nothing in the nature of rail abutting shoulders to take the side thrust of the rails. Accordingly it is obvious that it has no bearing as an anticipation of this third Wolhaupter patent in suit, and I note that Mr. Miller expresses the same opinion.

Goldie Patent No. 631,039, Aug. 15, 1899.

This patent which is too late in date to have any bearing on any but the third Wolhaupter patent in suit is, so far as the questions in the present controversy are concerned, practically identical with that of the prior Goldie patent No. 610,179 which I discussed a page or so before, and it fails as an anticipation of either claim 7 or 9 of the third Wolhaupter patent in suit for all the reasons that I set out in connection with my consideration of said prior Goldie patent No. 610,179 and I may add that Mr. Miller agrees with this opinion.

1186 Kinney & Trueblood, No. 631,873, Aug. 29, 1899.

This patent, also pertinent only in date to the third Wolhaupter patent in suit, shows a tie-plate with a single groove in the otherwise perfectly flat and smooth rail supporting surface, and this single groove is not transverse, so that the structure of this Kinney and Trueblood patent has even less pertinence than the structures of the two Goldie patents Nos. 610,179 and 631,039, which I have already discussed, and which, so far as the present investigation is concerned, this Kinney & Trueblood tie-plate so closely resembles. It fails as an anticipation because it has neither the transverse grooves or channels in the rail supporting surface, nor the rail abutting shoulder. I note that Mr. Miller agrees with my view of the impertinence of this patent.

Wolhaupter Patent No. 636,607, Nov. 7, 1899.

This is a peculiar two-part tie-plate in which the rail abutting shoulder is adjustably secured on the tie-plate proper. The rail supporting flanges are not directly above the tie-penetrating flanges, as provided for by all the claims in controversy of the second Wolhaupter patent in suit, so that it would have no pertinence to the second Wolhaupter patent in suit even if it were the product of another inventor and not of the same inventor and therefore impertinent to the second Wolhaupter patent in suit. It is old enough to be considered as a publication with reference to the third Wolhaupter patent in suit, but it entirely fails as an anticipation for either of the claims in controversy of that patent for the reason that the channels or grooves in the tie-plate are not transverse, and consequently they do not give the beneficial action of their being
1187 cleared by the suction of the passing train and of being protected throughout their entire length by the rail above them.

Moreover, the rail abutting shoulder is not an integral part of the plate, such as is contemplated by the claims in controversy of the third Wolhaupter patent in suit.

For the foregoing reasons I am clearly of the opinion that this Wolhaupter Patent No. 636,607 has no bearing whatever as an anticipation of any of the claims in controversy of any of the Wolhaupter patents in suit, and I note that Mr. Miller agrees with this view, and furthermore I do not find that defendant's expert, Mr. Carter, has anywhere urged that it anticipates any of the claims of any of these patents in suit.

Hannah Patent No. 636,982, Nov. 14, 1899.

This patent, for a "Beam Shoe" obviously has nothing whatever to do with tie-plates, and it does not disclose a structure that has any bearing whatever on the third Wolhaupter patent in suit, which is the only one to which it is prior in date. Mr. Miller agrees with this opinion and I do not find that Mr. Carter, defendant's expert, anywhere suggests that this patent has any bearing on the patents in suit.

Charlton Patent No. 649,629, May 15, 1900.

This tie-plate, which is only old enough to be compared with that of the third Wolhaupter patent in suit, fails as an anticipation of any of the claims in controversy for the reason that the otherwise perfectly smooth and flat rail supporting surface is only broken by a single groove or channel, and even that channel is not transverse, so that it cannot have the beneficial action of the suction through it by the passing train, nor can its entire length be covered by the rail and thus protected. I note that Mr. Miller agrees with the
1188 above expressed views as to the failure of this Charlton patent as an anticipation of the claims in controversy of the third Wolhaupter patent in suit.

Avery Patent No. 662,850, Nov. 27, 1900.

The tie-plate of this patent, which its old enough to be considered in connection with the third Wolhaupter patent in suit only, shows two very small and shallow depressions L extending at right angles to the direction of the rail, so that they are not transverse to the tie-plate. Accordingly, even if these minute channels were of the same size as those of the third Wolhaupter patent in suit, this Avery patent would still fail as an anticipation because the channels are not transverse, as required by the claims in controversy in order to secure the beneficial action of the suction of the passing train in removing the dust and sand from said channels as well as the protection of the rails for them throughout their entire length. Accordingly, for the foregoing reasons, this Avery patent fails as an anticipation for any of the claims in controversy of any of the Wolhaupter patents in suit, and I note that Mr. Miller agrees with this opinion.

Sellers Patent No. 684,466, Oct. 15, 1901.

This patent shows a tie-plate of a rather unusual design, in which channels or grooves c^1 are formed in the upper surface by rolling the plate in that shape, but with the under sides formed with corresponding convex surfaces so that as a result these channels or grooves or depressions have no effect whatever in lightening the plate, while at the same time maintaining the desired strength. The tie-plate of the third Wolhaupter patent in suit, to which alone this Sellers tie-plate need be compared, does not have the grooves or chan-
1189 nels formed in this manner and I do not understand that the said third Wolhaupter patent in suit contemplates their being formed in any such manner. Moreover, the grooves or channels of this Sellers device, such as they are, are not transverse, and consequently are neither cleaned by the suction of the passing train, nor protected throughout their length by the superimposed rail. Accordingly, they are not such channels as are contemplated by the claims in controversy of the third Wolhaupter patent in suit, and moreover, the Sellers tie-plates are not provided with the rail abutting flanges which are an essential feature of the tie-plate covered by claims 7 and 9 of the third Wolhaupter patent in suit. For the foregoing reasons therefore I do not consider that this Sellers patent No. 684,466 serves as an anticipation for any of the claims in controversy of any of the Wolhaupter patents in suit, and I note that Mr. Miller agrees with this opinion.

Wolhaupter Patent, No. 691,037, Jan. 14, 1902.

This patent is for a "Rail Joint," and not a tie-plate. I do not understand that it has any pertinence as an anticipation, because it is not a tie-plate, and moreover, is an invention of the same Wolhaupter who took out the third patent in suit, and who applied for said third patent in suit before this Wolhaupter patent No. 691,037 had any pertinence as a publication. As previously pointed out both by myself and Mr. Miller, a rail joint is a radically different structure and device both in its function and mode of operation, as the rail joint is rigidly secured to the rails, so that it tends to move on the ties, whereas the rail moves on the tie-plate which is stationary on the tie, so that the plate takes the wear from the rail instead of transmitting it to the tie. For the foregoing reasons therefore, I am clearly of the opinion that this Wolhaupter patent No. 691,-
1190 037 has no pertinence as a reference for the claims in controversy of the third Wolhaupter patent in suit, and I note that Mr. Miller agrees with this opinion.

Jones Patent No. 691,316, Jan. 14, 1902.

This patent is too late in date for comparison with anything but the third Wolhaupter patent in suit, and I note that so far as its bearing on the present controversy is concerned, it may be considered as substantially identical with the tie-plate shown in the prior Goldie patents Nos. 610,179 and 631,039, and that accordingly it

fails as an anticipation for either claims 7 or 9 of the third Wolhaupter patent in suit for the reasons that I have set out in my discussion of said Goldie patents Nos. 610,179 and 631,039. I note that Mr. Miller agrees with this opinion, and I do not find that Mr. Carter anywhere contends that this Jones patent anticipates any of the claims in controversy of any of the Wolhaupter patents in suit.

Hart Patent No. 696,964, April 8, 1902.

This tie-plate patent is too late to necessitate a comparison of it with any except the third Wolhaupter patent in suit, and it will at once be noted that the depressions or grooves 10 extend only to the middle of the plate, where they terminate, so there is no through passage from one side of the plate to the other, such as I understand is contemplated by claims 7 and 9 of the third Wolhaupter patent in suit in order that the suction of the train may serve to clear the channels of the dust and sand. Moreover, this Hart tie-plate does not have the rail abutting flange or shoulder which is an essential feature of each of the claims in controversy of the third Wolhaupter patent in suit. For the foregoing reasons therefore I am
1191 clearly of the opinion that this Hart patent fails as an anticipation of any of the claims in controversy of any of the Wolhaupter patents in suit, and I note that Mr. Miller agrees with this view, and I do not find that Mr. Carter any where urges it as an anticipation.

Anderson Patent No. 700,714, May 20, 1902.

This is another "Railway Rail Joint" patent in which the bridge plate C spans the space between the ties and has its ends supported on the ties. As in all these rail joint patents the bridge piece is rigidly secured to the rail through the medium of the peculiarly shaped fish plates B which are bolted to the rail by the bolts D. The resulting rigid structure moves up and down with the rails, so that the wear of the bridge plate is on the tie, instead of the wear of the rail being on the plate as in the essentially different tie-plate device. For these reasons therefore I am of the opinion that this Anderson patent does not serve as an anticipation of the tie-plate covered by claims 7 and 9 of the third Wolhaupter patent in suit, and Mr. Miller agrees with this view and I note that Mr. Carter does not urge that it is an anticipation of this third Wolhaupter patent in suit. Mr. Miller discusses this Anderson patent at a considerably greater length and gives other and additional reasons for his views, and I may add that I fully agree with the additional reasons which he presents in his discussion of this patent.

So far, in my answer to this question, I have pointed out a considerable number of the patents of the prior art which Mr. Carter either admits are not, or does not claim as, anticipations of any of the claims in controversy of the three Wolhaupter patents in suit. After a careful consideration of his testimony, I understand that Mr.

Carter expressed the view on his direct examination that the
1192 Wells patent No. 203,570 and the Goldie patent No. 485,030 serve as an anticipation for each and all of the claims in controversy of all three of the Wolhaupter patents in suit, and that he furthermore expressed the opinion that the Reece patent No. 494,692 anticipated the claims in controversy of the first and second Wolhaupter patents in suit. I also understand that he considered the Dunham No. 469,386 to be an anticipation of the first Wolhaupter patent in suit, and that finally he considered that the claims in controversy of the third Wolhaupter patent in suit were also anticipated by the Gould patent No. 280,030; Dockstader patent No. 462,399; Goldie patent No. 540,356, and the Wolhaupter patents Nos. 579,509 and 691,037.

I have pointed out at length why I could not agree with this opinion of Mr. Carter's, as I do not consider that any of these patents are an anticipation of any of the claims in controversy of the three Wolhaupter patents in suit, and it seems unnecessary to here repeat the reasons which Mr. Miller and myself have given for our opinions contrary to Mr. Carter's views on the subject.

Recess.

When, however, it came to his cross-examination, Mr. Carter's views of the pertinency of the prior art seemed to have been suddenly enlarged as during said cross-examination he expressed it as his opinion that each and every one of the claims in controversy of the three Wolhaupter patents in suit were anticipated by each and every one of the following list of patents, provided they were old enough, if said claims were construed broadly enough to cover defendant's infringing tie-plate:

Wootten, No. 66,437;
Gould, No. 280,030;

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Currier, No. 379,210;
Davies, No. 421,678;
Harris, No. 514,828;
Servis, No. 524,868;
Morrell, No. 531,837;
Stuart, No. 535,963;
Chamberlin, No. 538,817;
Weed, No. 566,828;
Avery, No. 574,773;
Richards, No. 584,603;
Harris, No. 603,563;
Morrison, No. 622,965;
Kinney & Trueblood, No. 631,873;
Charlton, No. 649,629;
Avery, No. 662,850.

An examination of these various patents shows that while they are substantially all for tie-plates, yet they nearly all show tie-plates in which the rail supporting surface is perfectly flat and smooth, so that they cannot possibly have the essential limitations of the rail supporting flanges of the first and second Wolhaupter patents in suit, or the transverse channels or grooves of the third Wolhaupter patent in suit. It is somewhat difficult to understand the attitude which he has assumed in disregarding all these limitations which are not only absolutely expressed in the language of the claims, but presumably enforced by the prior art, unless it be that because defendant had a tie-plate that was defined by the claims in controversy, therefore such claims could not possibly define a novel and patentable structure. If this point of view is correct, then it is useless to apply for patents for improvements in an art, especially if those improvements are likely to be adopted by some rival concern.

1194 It would seem to be his view that there could be no patentable improvements in this particular art, and once Mr. Servis had invented the first tie-plate (if we assume that the Servis patent No. 249,407 shows the earliest tie-plate) it was useless to attempt to obtain any protection under the Patent Laws in this particular art. However, the officials in the Patent Office, whose opinion should carry more weight than Mr. Carter's, think that improvements in this particular art were possible, and have granted no less than fifty-two additional patents on tie-plates that are of record in this case, and I presume that still others have been granted since the date of the latest Wolhaupter patent in suit.

I do not agree with these extraordinary views of Mr. Carter, as none of the patents of the prior art which I have considered and of which I am aware, discloses the novel tie-plate structures defined by the various claims in controversy of the three Wolhaupter patents in suit, for the reasons I have heretofore set forth at length, and, moreover, the novel structures of these claims are clearly present in defendant's tie-plate complained of. I agree with the views expressed by Mr. Miller, and not with the views expressed by Mr. Carter.

Q. 7. The defendants have introduced in evidence as exhibits, over complainant's objections, the patent to Sheldon, No. 164,776 of 1875, the patent to Whittenhall, No. 185,808 of 1876 and the patent to Goldie No. 356,760 of 1887, but has adduced no evidence with respect thereto, to which I might direct your attention. I will therefore ask you to look at these exhibits, state briefly what each patent discloses and what bearing, if any, in your opinion, these patents have on either of the three Wolhaupter patents in suit by way of anticipation or otherwise?

A. —.

Sheldon Patent No. 164,776, June 22, 1875.

1195 This patent is entitled a "Joint Support for Street Railway Rails" and obviously has nothing whatever to do with tie-plates, as it discloses a splice plate shown in cross-section in Figure 2 as being of a peculiar shape to co-operate with the under side of

grooved rails, such as are used on street railways to which grooved rails it is secured by the nuts and bolts shown. It is not associated in any way with ties, but is laid on longitudinal stringers B instead of the transverse ties with which the patents in suit are concerned. The plates A are shown as merely resting on the stringers B, although they would be held to some extent from lateral movement by the nuts which are placed in recesses cut in the surface of the sleepers B.

The patentee says that "it is of no particular consequence whether the plate is fastened to the stringer or not; but I prefer to fasten it by spikes, etc." This shows at once that this plate has no relationship whatever to tie-plates inasmuch as the latter must be securely fastened to the ties to prevent the spreading of the rails, whereas it is a matter of no importance whether or not these splice plates of the Sheldon patent are spiked to the stringers or not. I noted that the upper surface of the splice plates was complementary to the lower surface of the rails, so that the effect is the same as if a flat bottomed rail rested on a flat top plate, so far as the questions here at issue are concerned, and obviously even if this Sheldon device were a tie-plate, it would not have either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the transverse grooves or channels in the rail supporting surface of the third Wolhaupter patent in suit. Accordingly it is perfectly obvious that it has no bearing whatever on the invention of the Wolhaupter patents in suit, and entirely fails as an anticipation of any of the claims.

1196 Whittenhall Patent No. 185,808, Dec. 28, 1876.

This patent discloses, not a tie-plate, but a "railroad tie" and the character of the device is clearly shown in the drawings and defined in the following quotations from the specification:

"The object of my invention is to provide, as a substitute for the cross-ties of wood and other material now in use upon railroads, a metal cross-tie and chair for securing the rails in place upon the road-bed.

"My invention consists in a cross-tie made of a single piece of metal, corrugated in the process of manufacture, and provided with a series of fitting transverse apertures near its opposite ends for receiving and seating the track rails."

The structure and its method of operation is clearly shown in the drawings and inasmuch as the tie itself is metal, there could be no object whatever in providing it with a metallic tie-plate to take the wear. The tie is embedded in the road-bed, and obviously does not have to be spiked or otherwise secured in place, and I cannot see that there is anything about this Whittenhall device that in any way suggests the use of a metallic tie-plate of any character whatsoever upon a wooden tie, the object of the Whittenhall invention being to absolutely dispense with such wooden ties rather than to re-enforce them with metallic tie-plates. This Whittenhall patent absolutely fails as an anticipation for any of the claims in controversy of any of the Wolhaupter patents in suit.

Goldie Patent No. 356,760, Feb. 1, 1887.

This patent is for a tie-plate which, however, has no more pertinence than the early Servis tie-plate patent and others of the type in which a perfectly flat and smooth rail supporting surface is employed. The under-side is toothed to frictionally engage the
1197 tie G, and the rail and plate are spiked to the tie. However, inasmuch as it has the perfectly flat and smooth rail supporting surface, it obviously does not serve to anticipate any of the claims in controversy, inasmuch as it has neither the rail supporting flanges of the first and second Wolhaupter patents in suit, nor the grooves or channels in the rail supporting surface of the third Wolhaupter patent in suit. In my opinion, it has no bearing whatever as an anticipation of the Wolhaupter patents herein sued upon.

Q. 8. Please look at the blue-prints which I now show you that have been offered in evidence by the defendant and are marked respectively, CC, DD, EE, FF, and GG and state whether or not either of these exhibits illustrates a tie-plate having any feature of the invention set forth in any of the claims in issue of either of the three Wolhaupter patents in suit?

A. None of the tie-plates shown in any of these exhibits have any bearing by way of anticipating, restricting or limiting any of the claims in controversy of the three Wolhaupter patents in suit, inasmuch as in every case, unless possibly in "Defendant's Exhibit EE," the rail supporting surface is perfectly flat and smooth and if the surface is slightly concaved in "Defendant's Exhibit EE," it would shortly be flattened sufficiently so that there would be no space whatever between the top of the plate and the bottom of the rail. Obviously, therefore, each and every one of these exhibit tie-plates must necessarily lack either the rail supporting flanges of the claims in controversy of the first and second Wolhaupter patents in suit, or the grooves or channels in the rail supporting surface of the third Wolhaupter patent in suit, and consequently cannot be an anticipation of any of these claims. None of these exhibits are, in the slightest degree, any better than the similar patent exhibits which I have discussed at length.

1198 Q. 9. Please look at the blue-print introduced by the defendant as Exhibit KKK and state what the illustrations represent and whether or not in your opinion either of them has any bearing by way of anticipation of the three Wolhaupter patents in suit?

A. In the absence of any descriptive matter, it is somewhat difficult to determine just what is disclosed by this Exhibit KKK. Judging from the cross-section of the wooden piece along which the rail extends, it is not a tie-plate, but rather a rail-joint or splice plate extending along the length of a stringer. It seems to me to be of the general character of the railway chair shown in the Wells patent No. 203,570, except that it is placed upon stringers rather than ties, and so is less pertinent even than the structure of the aforesaid Wells patent No. 203,570.

If my supposition is correct, and I believe it is, that it represents a rail-joint or splice plate, it obviously is not a tie-plate and is even less pertinent than such devices as those of the Wells Patent No. 203,570, or the Sheldon patent No. 164,776, which it most closely resembles in its location on a stringer as will be seen by a comparison with Fig. 2 of said patent. Even if it could be considered as a tie-plate, although I do not think it is intended for anything of the sort, it necessarily fails as an anticipation for the reason that it either lacks the rail supporting flanges or the tie penetrating devices of the flanges of the first and second Wolhaupter patents in suit, or it lacks the plurality of transverse grooves or channels of the third Wolhaupter patent in suit.

The depressed portion beneath the rail in the lower figure does not necessarily indicate a channel, but more likely indicates a pocket, inasmuch as the line is obviously a section, otherwise the
1199 screw-spikes would not be shown in elevation throughout their length. Whatever the device disclosed in these drawings be, it in my opinion entirely fails as an anticipation for any of the claims in controversy of either of the three Wolhaupter patents in suit.

I understand "Defendant's Exhibit O[25]" was offered in evidence as illustrating the disclosure of the lower figure of this "Defendant's Exhibit KKK," but in my judgment, it does not for the reason that it represents a tie-plate rather than a rail joint or splice plate, and is obviously inspired by the teachings of the Wolhaupter patents in suit, rather than by this paper exhibit. There is nothing about the paper exhibit to warrant the illustrative metal "Exhibit O[25]" being made of a short tie-plate length instead of a long rail joint length, and, moreover, the assumption that there is a channel in its surface is not warranted by the paper exhibit as it might just as well illustrate merely a pocket and not a channel. Whatever the paper exhibit can be said to disclose, I am clearly of the opinion that it is not an anticipation of any of the claims in controversy of either of the three Wolhaupter patents in suit.

Q. 10. Please look at the blue-print reproduction of the Railroad Gazette of September 30, 1887, marked "Defendant's Exhibit DDD," and also the aluminum model "Defendant's Exhibit O[24]" and state whether or not the "Exhibit DDD" illustrates a device that has any bearing upon either of the claims of the three Wolhaupter patents in suit, and also whether or not the "Aluminum Model Exhibit O[24]" correctly represents the device disclosed in "Exhibit DDD." In this connection you may if you choose refer to the deposition of the witness, Major Miller, in answer to Q. 12 and Q. 24, and to "Complainant's Exhibit Drawing No. 140," and "Complainant's Exhibit Model No. 143" referred to therein?

1200 A. I have carefully considered both "Defendant's Exhibit DDD" and Mr. Miller's discussion thereof in answer to Q. 12 of his deposition, and find that he has very carefully and clearly set out the exact facts in regard to what is disclosed by this exhibit, and I may say that I agree with him fully that this exhibit entirely

fails as an anticipation of any of the claims in controversy of either of the three Wolhaupter patents in suit.

Referring now to "Defendant's Aluminum Exhibit O^{24}" and Mr. Miller's discussion of it in answer to Q. 24 of his deposition I will say that I agree with him that this "Exhibit O^{24}" does not correctly illustrate the structure disclosed in "Defendant's Exhibit DDD," but that "Defendant's Exhibit O^{24}" is based rather upon the teachings of the Wolhaupter patents in suit, than of "Blue-Print Exhibit DDD." The latter exhibit certainly does not show the screw-holes opposite each other, nor does it show any channels extending across the plate, but the dotted lines *a* merely represent the pockets or cavities in the center of the plate, as is shown by the correct translation of the descriptive matter referred to by Mr. Miller in his answer to question 12 of his deposition. "Complainant's Exhibit No. 143, Miller Model in Correction of Defendant's Model Exhibit No. O^{24}, Exemplifying Fig. 7 of Defendant's Exhibit DDD" may correctly represent the disclosure of "Defendant's Exhibit DDD," but "Defendant's Exhibit O^{24}" cannot possibly be correct.

And thereupon an adjournment was taken to Thursday, July 7, 1910, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

1201 CHICAGO, ILLINOIS, July 7, 1910.

Met pursuant to adjournment.
Present: Counsel as before.
Direct examination of the witness, McElroy closed.

And thereupon, at the request of counsel for defendant, an adjournment was taken to Thursday, July 14, 1910, at 10:30 a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, July 14, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

And thereupon, on account of the indisposition of Mr. Reed, defendant's counsel, and at his request, an adjournment was taken to Friday, July 15, 1910, at 9:30 a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, July 15, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

Cross-examination of the Witness McElroy by Mr. Reed:

X Q. 11. Have you ever manufactured tie-plates?
A. I have seen them manufactured, but I have never been engaged in that business.

X Q. 12. Have you ever sold tie-plates?

A. No.

X Q. 13. Have you ever made any experiments with
1202 tie-plates either as to their manufacture, installation or use?

A. No, my observations have been confined to the ordinary use of them as distinguished from experimental.

X Q. 14. Where have you seen tie-plates in use to observe them?

A. I would be unable to name all the places, as I have noticed them at different points without making any investigation as to the conditions surrounding them or the character of the plates. I noticed quite a few of them in Joliet, Illinois, on the occasion of going out there to see the manufacture of tie-plates.

X Q. 15. When was this?

A. I could not give you first hand information without looking at my calendar in the office. I believe that Mr. Miller has given the date in his deposition, and it was the same day.

X Q. 16. Well it was since this suit began and within a few months and was the occasion that Mr. Miller detailed?

A. Yes.

X Q. 17. And you saw the same plates and in the same tracks that Mr. Miller has testified to?

A. I would say without hesitation they were substantially the same ones, although I may not have seen all that Mr. Miller did, and he may not have seen all that I did.

X Q. 18. While you were together on that occasion you made substantially the same observations?

A. That is correct, but I made no notes, and of course have forgotten the details of the observations.

X Q. 19. Could you recall the kinds of tie-plates you saw on this occasion?

A. No. I did not charge my mind with the kind of
1203 plate at all, and having been busy with entirely different matters since that time up to the taking up of my testimony in the present case, my recollection is rather indefinite as to the kind of plates.

X Q. 20. And is this the only occasion on which you noticed or observed tie-plates in track other than in the casual way that the ordinary uninterested individual sees them?

A. My impression is that I have noticed them at different times since I first testified in this case, and gave them more than a casual consideration, but as I made no notes of these observations and did not charge my mind with recollecting them, I would not care to make *make* any definite statement outside of the occasion at Joliet.

X Q. 21. And you cannot recall or state when or where or in what tracks, or what kind of tie-plates these observations related to?

A. I certainly would not undertake to say what kind of tie-plates, but now that I think of it, I am pretty certain I saw some on the track of the Pennsylvania Railroad at Atlantic City, last March.

X Q. 22. And what kind of tie-plates did you see there?

A. I do not remember the construction of them other than they were some form of rolled iron tie-plates.

X Q. 23. And that is the only definite recollection that you have on the subject?

A. It is the most definite that I have. I did not charge my mind with these matters as I am not posing as a practical expert in tie-plates, and unless I knew all about the occasion of the laying of the plates, the character of the traffic, and so forth, any observations that I might make would be of no practical value except to inform myself as to the conditions under which they are used, and
1204 the general effect of the wear on the ties and spikes, and to some extent on the plates.

X Q. 24. And in none of the instances that you investigated or observed were you acquainted with the circumstances as to the installation and traffic?

A. That is correct.

X Q. 25. And I suppose in none of the instances that you observed were any of the tie-plates taken out or the rail lifted so that you could inspect the entire plate?

A. I have a very definite recollection of seeing some tie-plates and ties after the tracks of the Chicago City Railway had been dismantled prior to being replaced within the last year or two, but just whereabouts, or what kind of plates, I could not say. I recollect that the ties showed very clearly how the plates had been forced into them to some extent. I also remember seeing some old spikes in which the heads had been pretty nearly cut off. Of course, while I recollect all these matters I do not consider that they are of any particular importance because I knew nothing about when the ties or plates or track were installed, although presumably the traffic had been very heavy.

X Q. 26. What I meant by the question was to ascertain whether when you saw on any occasion tie-plates in track the plates were taken out at the time of your observation or the rail lifted so that you could observe the exact condition of the tie or the plate on such occasion?

A. I do not recall being present just at the time any particular bit of track I noticed was dismantled, and certainly on no occasion was the plate removed or the rail lifted for the purpose of inspecting it.

X Q. 27. Have you ever sold tie-plates?

A. No.

X Q. 28. You saw tie-plates manufactured at Joliet on the same occasion that Mr. Miller has testified to?

1205 A. Yes.

X Q. 29. What kind of tie-plates were manufactured?

A. I did not make any notes of them, but my recollection is that they were of the same general character as defendant's tie-plates herein complained of, and I am quite confident they had the shoulder and grooves on the upper surface and the tie penetrating flanges on the lower surface, the shoulders, grooves and flanges being transverse to the tie when they are in place.

X Q. 30. Did you ever see any other kind of tie-plates made except this one and on this one occasion?

A. No.

X Q. 31. And this inspection was made for the purpose of acquiring information in connection with your testimony as an expert in this suit?

A. Yes.

X Q. 32. Did you ever see, as a commercial article, outside of models, any tie-plates of the form and character shown in the drawings of the three patents in suit Wolhaupter No. 538,809, 691,332 and 721,864, I mean practically the same configuration?

A. Not in the same specific form.

X Q. 33. Did the complainant in connection with your testimony and as a part of its manufacture, ever exhibit to you any steel or iron tie-plate practically of the same configuration as those shown in the three patents in suit?

A. No. I do not recall that I ever examined any of their commercial tie-plates, although I noticed quite a good many pictures of them.

X Q. 34. Well, did the complainant or any of its officers or employes ever show you a commercial tie-plate of its manufacture, or which was stated to be of its manufacture, or the commercial catalogue or price-list containing a picture or illustration as of a market product showing a tie-plate which in form or configuration
1206 was substantially identical with the forms shown in the three patents in suit or any of them?

A. I do not recall any that I would call substantially identical in all its details.

X Q. 35. Did the complainant or any of its officers or employes ever state to you that it had at any time manufactured or sold commercially any tie-plate substantially identical with any of the devices shown in the three patents in suit, I mean in configuration or form?

A. So far as I recall, complainant gave me no information as to the history of the development of the tie-plate commercially other than I gathered from the patents in evidence and some catalogues and drawings.

X Q. 36. What I was trying to ascertain is whether, so far as you know, the complainant ever manufactured or claimed to have manufactured, commercially, tie-plates substantially identical in form or configuration with any of the forms shown in the three patents in suit?

Col. Brown: Question is objected to as irrevelant and utterly immaterial in view of the decisions of the Supreme Court of the United States, particularly in a recent case, and, secondly, because calling for hearsay evidence, secondary evidence and evidence shown not to be within the knowledge of the witness.

A. I really do not know what they have or have not manufactured.

X Q. 37. Letters-patent No. 66,437 to J. E. Wootten show a device consisting of a metallic plate upon which the rail bottom rests with a rib or projection from the lower surface of the plate which engages in the tie, do they not?

A. It shows a coupling member belted to the ends of the rails it joins and having a portion thereof in the form of a plate upon which the bottoms of the rails rest, and this coupling member has a flange the ends of which are adapted to be inserted in grooves cut in the ties.

1207 X Q. 38. I would be glad if when a question is susceptible of an answer yes or no, you would so answer it and make any explanation that you desire thereafter. Does not said patent to J. E. Wootten show a metallic plate upon the upper surface of which the rail bottoms rest with side shoulders or flanges against which the rail flanges impinge and with a lower projecting rib or flange from the under surface which is intended to and does engage in the tie or ties?

A. The language you employ partially describes the structure.

X Q. 39. And the device shown in the Wootten patent does exhibit a plate having the elements of an upper rail bearing surface, side shoulders or flanges on the upper surface and a lower tie engaging flange from the under surface?

A. If we disregard the function and mode of operation of this Wootten device, the language of your question may be considered to properly describe it.

X Q. 40. Is not the function of the lower projecting flange and its effect to prevent lateral or horizontal movement of the plate when in position?

A. That is far from being its primary function, as I should say that its main or primary function is to strengthen the girder spanning the space between the two ties D. The showing of Fig. 1 would indicate that it had no effect in preventing the lateral or horizontal movement, although the showing of Figs. 2 and 3 would indicate its ends did have such an effect. The two sets of drawings are inconsistent, but in view of the statement of the specification that:

"at the same time the coupling serves to effectually retain the rails in the proper lateral position."

I would take it that the showing of Figs. 2 and 3 is correct.

1208 X Q. 41. Then irrespective of primary function or the function of the lower flange upon the plate itself, this lower flange does serve to prevent lateral or horizontal movement of the plate when in position?

A. If the showing of Figs. 2 and 3 is correct that is so.

X Q. 42. And the effect of the flanges or shoulders on the upper surface is to keep the rails in position and prevent lateral or horizontal movement of the rails, is it not?

A. Yes.

X Q. 42. And the plate itself as a whole is an insert between the rails and the ties and serves to support the rails, does it not?

A. I should not describe it that way, inasmuch as only the ends of the plates can be said to be between the rail or rails and the ties. Its main function is to couple the ends of the adjoining rails rather than to support them.

X Q. 44. But there is a certain space at each end of the plate where the plate is between the rails and the tie, is there not?

A. Yes.

X Q. 45. And in addition to supporting the rails the plate also serves to keep them in position to prevent lateral or horizontal movement, does it not?

A. It would be more accurate to say that in addition to coupling the ends of the rails it serves to prevent them from horizontal or lateral movement.

X Q. 46. Letters-patent to J. L. Hudson, No. 142,020, shows a plate of metal inserted between the rails and the tie, does it not?

A. It shows a plate D bolted to the ends of the rails and the plates C which plates C seem to have some of the function of fish-
1209 plates, but the specification does not state, nor does the drawing show that the plate D is necessarily placed on a tie. The part D is called a "chair" in the specification and in view of the thickness thereof relative to its length, I do not think I would naturally think of calling it a plate.

X Q. 47. Do you not think that it is intended that the part D is to be placed upon a tie?

A. While it does not say so, in view of the fact that it is called a "chair," and inasmuch as railroad chairs are ordinarily placed on ties, I should expect that it would be placed upon a tie.

X Q. 48. And when so placed the lower projection B of the part D as shown in Fig. 2 of the specification drawings would be inserted or placed in a cut or groove of the tie?

A. Understanding that you refer to the wide flange on the bottom of the chair D, that would necessarily have to be placed in a channel cut in the tie for the express purpose of receiving it.

X Q. 49. And the metallic piece D shows upon its upper surface a groove or channel extending clear across the piece does it not?

A. It shows such a groove or channel which, however, in use is entirely filled by the flange B on the bottom of the rails.

X Q. 50. Taking the piece D which is of metal and considering it before it is placed in track, it shows a metallic piece with an upper surface intended to support the rail bottom, with side shoulders against which the rail flanges impinge, and a lower projecting flange on the under surface intended to engage in the tie, does it not?

A. Understanding that the "lower projecting flange" is placed in a specially cut groove or channel for that purpose, I should say that is correct.

X Q. 51. And when this metallic piece D is in position the
1210 effect of the lower projecting flange B thereof in the specially cut groove or channel of the tie, would tend to prevent lateral movement of the plate and rail, would it not?

A. It would undoubtedly be the tendency.

X Q. 52. And the side shoulders or flanges on the upper surface of the metallic piece D when in position would also tend to prevent lateral movement of the rail, would they not?

A. While they would have that tendency, in view of the larger

surfaces having the same tendency co-operating with the flange on the bottom of the rail, I should say that these shoulders are comparatively unimportant.

X Q. 53. If, however, the flange were omitted from the bottom of the rail and a flat bottom rail used, these lateral top surface shoulders or flanges would tend to prevent lateral or horizontal movement of the rail, would they not?

A. While such a modification is not suggested by the Hudson patent, if the change suggested in your question were made, the tendency you mentioned would certainly exist.

X Q. 54. Now, taking the piece D which is of metal and considering it detached and before it is placed in track, it exhibits a metallic piece with an upper surface int[illegible] o support the rail bottom, with side shoulders against wh[illegible] ail flanges impinge, and a groove in the upper surface ext[illegible] the length of the piece, and a lower projecting flange on the under surface intended to engage in the tie, does it not?

A. Noting that the groove in the upper surface is intended to receive the flange B and that the flange on the lower surface will be placed in a specially cut recess to accommodate it, that is correct.

1211 X Q. 55. And this piece D as shown exhibits rail bearing surfaces on each side of the groove or channel on the upper surface, does it not?

A. Yes.

X Q. 56. And all these elements, side shoulder flanges on the upper side, groove or channel on the upper surface and flange or projection on the lower surface are parallel to the rail and crosswise of the tie?

A. Yes.

X Q. 57. Then disregarding the device of the Hudson patent when in position and considering the piece D detached and by itself, it shows a metallic piece with an upper rail bearing surface having a groove therein its entire length, lateral side shoulders or flanges and a lower projecting flange all parallel to the direction of the rail?

A. Disregarding the comparative dimensions of the elements, their function and mode of operation, the general language of your question would be properly applied to the part D of the Hudson patent.

X Q. 58. Now, in your opinion, could not such a piece of metal as is shown as D be placed on ties intermediate between the joints of the rails with the lower projecting flange B thereof placed in a specially prepared channel or groove of the tie and a flat bottom rail placed thereon, and under such circumstances the piece D performed the functions of a tie-plate in protecting the tie and holding the rail in position to some extent?

A. While it would be physically possible to locate the plate as suggested in your question, I would not consider it a practical arrangement and certainly it would not be a commercial proposition.

X Q. 59. But if this were done, would not the piece of metal operate as a tie-plate to protect the tie from the wear of the rail and hold the rail in position to some extent?

1212 A. If the plates C are employed and the piece D is bolted to the rail, as shown in the patent, it would not serve to protect the tie, but would destroy it about as rapidly as if the piece D were not used. If the plates C are omitted, and the piece D is not bolted to the rail, I do not see what is to hold the plate in place, as there are no spikes or spike holes associated with it.

X Q. 60. My question contemplated the use of the piece D without the plates C and without the bolt. If the piece D alone were placed on a tie and a flat bottom rail placed thereon, would it not, to some extent, perform the functions of a tie-plate in protecting the tie and holding the rail in position?

A. In view of its liability to get out of place, if employed as suggested in your question, I think there would be more danger in its use than any possible good or protection that could result.

X Q. 61. But this objection of liability to get out of place under the circumstances described in my last question could be obviated by spiking the piece or securing it to the tie by spikes, could it not?

A. To some extent that could be done, and then you would have to spike the rails to the ties separately.

X Q. 62. If the rails under the circumstances detailed in connection with the use of the piece D were separately spiked to the ties, then would not the piece D inserted without the fish-plates or bolts tend to act as a tie plate to protect the tie surfaces and hold the rail in place through the action of the lateral shoulders on the top and the engagement of the lower flange in the tie, I mean of course with the use of a flat bottom rail?

A. Understanding by your question that the part D is not spiked to the tie, I could not be certain just what the resulting action would be, but I do not think any railroad man would ever equip a
1213 track in the manner suggested in your question. The suggestion does not appeal to me as at all practical.

X Q. 63. I did not ask for your opinion as to the practicability of the method because you have confessed to complete ignorance on the question of the practical use of tie-plates and have had no experience therein. What I wanted to know was whether if the piece D without the bolt or fish plates were placed in a tie, and flat bottom rail employed and placed thereon, and such rail spiked to the ties, the piece D would not perform the functions of a tie-plate in protecting the tie from rail wear and holding the rail in position while preventing lateral or horizontal movement?

A. The statement of the opening sentence of your question is obviously incorrect, as I said I did not pose as a practical expert in this art, but in view of my observations and study of the patents, I think that I am a long ways from being in a state of "complete ignorance on the question of the practical use of tie-plates." However, I take it the court will not be misled by your statement, and coming now to your question, I have already stated that in view of the unusual and unheard of conditions of your question I could not say just what the resulting action would be, and until you give me more details as to just how the rails are to be spiked to the ties and the location of the spikes relative to the piece D, I would not care to.

venture an opinion otherwise than that your idea seems to me entirely impractical.

X Q. 64. I did not intend to any extent to pass judgment upon your experience or ability in my statement but was taking your own modest disclaimer as I understood it and I had assumed that the rail under the circumstances was spiked to the ties in the usual method by driving spikes into the ties with their heads engaging the rail flanges, a spike being placed on each side of the rail on each
1214 side of the piece D when inserted. Now under those circumstances and the piece D inserted without fish plates or bolts so that the lower flange B of the piece D is in a specially prepared channel or groove of the tie, and a flat bottom rail employed, would not the piece D then operate as a tie-plate in protecting the surface of the tie from the rail and hold the rail in place by preventing lateral movement through the action of the lower flange and the side flanges or shoulders on the upper surface?

A. Understanding that the spikes extend close enough to the piece D to prevent its movement, the action you suggest would tend to take place, but in view of the comparatively small height of the shoulders engaged by the flanges of the rails, if the spikes were driven in the customary manner there might be a chance for the rail being forced over the shoulder. Of course, if the shoulder were made large enough, this action would not occur.

X Q. 65. And this action under the circumstances detailed in the last question would be increased in efficiency by spiking the piece D to the tie, would it not?

A. Yes.

X Q. 66. Then under the circumstances detailed in X Q. 64 we would have a metallic piece operating to some extent as a tie-plate by preventing wear of the tie by the rail and holding the rail in position by preventing horizontal movement and consisting of an upper rail bearing surface supporting the bottom of the rail, with a groove or channel the entire length of the upper surface, side shoulders or flanges on the upper surface against which the rail flanges impinge, and a lower tie contact surface with a lower projecting flange engaging in the tie, would we not?

A. Recalling all the details enumerated in X Q. 64 and the answer thereto, and disregarding the relative dimensions of
1215 the various elements and their intended function, the statement of your question would seem to be correct.

X Q. 67. And the efficiency of the device under these circumstances as a tie-plate would be increased in your judgment by spiking the piece D to the tie?

A. That would probably be true to some extent.

X Q. 68. And although there is no scale shown in the Hudson patent drawings, taking the drawings of the different elements and considering the apparent relative dimensions as shown in these drawings of the piece D as shown by the ordinary dimensions of rails, do you not think that there is plenty of space or metal shown in the side of the piece D for spike aperture through which spikes could be driven to secure the piece to the tie under the circumstances

I have detailed, although there are no such apertures shown in the drawings?

A. Yes, there is plenty of metal.

Recess.

X Q. 69. "Defendant's Aluminum Model Exhibit O^6" is in your judgment a correct exemplification of the device shown in the letters-patent to I. Wells, No. 203,570, except as to length is it not?

A. The proportions seem to be substantially correct although it strikes me that it is hardly thick enough in proportion to the dimensions of the rail. If the ties illustrated be of the correct dimensions in accordance with the ordinary tie, it obviously is not thick enough. However, there seems to be a very serious discrepancy in the proportions of the ties and rails shown, so that one is left somewhat in the dark as to what would be the proper dimensions of the chair itself. If Fig. 3 is accurate in its dimensions, I should say the Exhibit is substantially correct so far as its dimensions in
1216 cross-section are concerned, so that the answer to your question would be substantially an affirmative one.

X Q. 70. This "Aluminum Model Exhibit O^6" shows a metallic device capable of being inserted between the rails and ties having an upper rail bearing surface with two grooves therein, leaving three rail bearing surfaces or flanges to support the rail being a central rail bearing surface and two side rail bearing surfaces with lateral shoulders in the upper surface against which the rail flanges impinge and a lower projecting flange intended to be seated in the tie, does it not?

A. While it could be so inserted in connection with a rail of the proper size, it would not be a commercially practicable device for use in the manner specified in your question. Such a device would be impractical but it could be described by the language of your question.

X Q. 71. If "Aluminum Model Exhibit O^6" were so inserted between the rail and the tie and seated in the tie as to the lower flange and spiked to the tie would it not conform to some degree to the functions of protecting the tie from the wear of the rail and preventing horizontal movement on the part of the rail?

A. It would tend to prevent horizontal movement as well as the spikes served to hold it in position, and it might have some effect in preventing the wear of the tie, although if the tie were cut as deeply as shown in the drawings, the remedy would be worse than the disease, as the end of the tie would probably be split off.

X Q. 72. The question had no reference to the drawing but simply to the aluminum model and contemplated only that a plate like the model be seated in the tie to the depth of the lower flange, and contemplated the ordinary tie now in use. What do you say to the question with that understanding?

A. While it is not well adapted for use with spikes the
1217 device would theoretically have some such action as you suggest, although I have already stated that in my opinion it would be commercially impractical for use as a tie-plate.

X Q. 73. If a plate like this aluminum model were seated in a tie, would not the lower flange tend to prevent lateral movement of the plate and rail?

A. It would provided it did not split off the top of the tie outside of the groove cut in it to accommodate the flange on the bottom.

X Q. 74. And would not such a use of a plate like this aluminum model, as I have described, tend to prevent lateral movement of the rail by reason of the action of the side shoulders or flanges on the upper surface?

A. So long as the model is held from lateral movement on the tie it would tend to prevent the lateral movement of the rail.

X Q. 75. And this prevention of lateral movement of the rail in such a use as described would be accomplished by the side shoulders or flanges on the upper surface would it not?

A. They would have their share in the task of preventing such lateral movement.

X Q. 76. And the grooves or channels on the upper surface of a plate like the aluminum model would serve at once to lighten the plate and to allow the escape of sand, grit and water and prevent their accumulation beneath the rail bottom, would they not?

A. If the dimensions of the model were preserved, they would have these effects.

X Q. 77. And the effect of the upper surface lateral shoulders in a plate like aluminum model O^6 to prevent lateral movement of the rail would take place or result in the same way theoretically as in the case of the shoulder on "Complainant's Exhibit No. 15," would it not?

1218 A. So far as the action of the shoulders per se is concerned, the theory of the operation would be the same in both cases.

X Q. 78. And the effects of the grooves in the upper surface in lightening the plate and allowing the escape of sand and grit would be the same theoretically in a plate like the aluminum model O^6 and "Complainant's Exhibit No. 15," would they not?

A. The theory of operation noted in the two cases would necessarily be the same.

X Q. 79. Is it not a fact also that the theory of the operation of the lower flange engaged in the tie in aluminum model O^6 and of the two lower flanges in "Complainant's Exhibit No. 15," would be the same in preventing lateral movement of the plate?

A. I should hardly want to go that far inasmuch as the model would necessitate cutting a very considerable channel in the tie, and the element of surface friction between the bottom of the plate and the top of the tie is or might be largely ignored in view of the depth of the grooves. In the defendant's plate, the flanges are sharpened so as to penetrate the tie without having any grooves previously cut in the top of the tie, and the surface friction between the bottom of the plate and the top of the tie would be a very considerable factor in maintaining the proper position of the plate on the tie. Of course insofar as the lateral movement is prevented by a flange on the bottom of the plate abutting against a corresponding surface formed in the top of the tie, the general principle of operation is the same.

X Q. 80. Then in a device like aluminum model O^6 used as a

tie-plate we have a lower flange which operates by engaging in the tie to prevent to some degree lateral movement of the plate, an upper rail bearing surface separated by two parallel channels or
1219 grooves running the entire length of the plate and form three distinct rail bearing surfaces, and side shoulders or flanges against which the rail flanges impinge and which serve to prevent lateral movement of the rail and which grooves serve to lighten the plate and to afford a means of escape for the sand and water from beneath the rail bottom, is that correct?

A. If this model were used in the manner suggested it would have the actions noted in the question to a certain extent and the language of the question might be applied to it.

X Q. 81. And these elements of side flanges on the upper surface, grooves or channels in the upper surface and lower projecting flange are all parallel to the rail and crosswise of the tie?

A. Yes.

X Q. 82. Referring to the Wells patent specification and drawings is it not a fact that such specifications and drawings clearly show a metallic device having a lower projecting flange which engages in the tie, an upper rail bearing surface separated into three surfaces by two parallel grooves or channels running the entire length of the device and serving at once to lighten the device and afford the escape of sand and water from underneath the rail bottom, and further having side shoulders or flanges against which the flanges of the rails impinge?

A. Owing to the length of the joint or chair shown in the patent, I doubt if the grooves would be effective in the matter of the escape of sand from underneath the rail bottom, but otherwise the language of the question seems to apply to the disclosure of the patent.

X Q. 83. And does not the device as shown and described in the patent specifications and drawings serve at once to hold the
1220 rails in place and prevent lateral movement and protect the surfaces of the ties from the wear of the rail?

A. I doubt very much whether it would be of any value in protecting the surface of the tie from wear, as the wear of the joint might be about as much as the wear of the rail if the joint were omitted. I would not want to make a definite statement on this point without having tested it for the reason that it presents some uncertain questions in friction. It will be noted that the bottom of the rail engages the rail supporting surface for the entire length of the chair or coupling, whereas the chair or coupling only engages the tops of the ties for the width of the ties which seems to be less than one-half of the length of the chair or coupling. Then too the question of how much effect the spikes would have in holding either the chair or rail from movement is uncertain, and I think that a definite answer could only be given after an actual test of such a device.

X Q. 84. This device as shown and described in the patent specifications and drawings shows the lower flange immediately beneath the central rail bearing surface or flange, does it not?

A. Yes.

X Q. 85. And whether the device of the patent would serve to

protect the ties from rail wear or not, the specifications and drawings show a metallic device between the rails and ties and separating the rail from the ties and having the elements of lower projecting flange engaging in the tie and upper surface supporting the rail and divided into three rail bearing surfaces by means of the grooves or channels in the upper surface, and the side shoulders or flanges against which the rail flanges impinge, do they not?

A. Bearing in mind that the tie engaging flange is of such a size and shape that a special channel must be cut in the ties to
1221 receive it, I would answer your question affirmatively.

X Q. 86. You regard rail chairs, rail joints and tie-plates as kindred manufactures or arts, do you not?

A. They are kindred in that they are all employed in track construction.

X Q. 87. And are they not also kindred in that they are devices which relate to the connection of rails and ties in track construction?

A. Rail joints are rather concerned with the connection of rails to rails than of rails to tie, although in some cases, the joints are connnected to the ties to a certain extent. The chairs and plates might more properly be said to be concerned with the connection of rails and ties.

X Q. 88. And have you not found in your examination of the devices that have been used and shown in letters-patent for rail joints, rail chairs and tie-plates, that they shade into each other and frequently exhibit in one device common features and common functions, some so called railway chairs performing to an extent at least the functions of plates, some tie-plates performing the functions of chairs and some joints performing the functions of joints, plates and chairs?

A. While these devices are usually quite distinct and separate, there are some patents that show hybrid constructions.

X Q. 89. And does not this Wells device show functions as a railway joint, railway chair and railway tie-plate, has it not some of the features of each?

A. I do not see that it has any functions of a tie-plate as distinguished from a railway chair.

X Q. 90. Well as shown in the patent it operates as a rail joint, does it not?

A. Not exactly. A railway joint is ordinarily arranged
1222 so that all parts are bolted rigidly to the rails so that all parts of the entire joint must move together to some extent at any rate, whereas there is no positive connection between the rails and the chair of the Wells device, the connection being purely frictional.

X Q. 91. The insertion of bolts which would bind the rail flanges of the two rails to the Wells device would convert it into a rail joint in your judgment as well as a rail chair?

A. If it were modified as suggested in your question I should say that it then might be properly called a rail joint, if located as shown in the patent.

X Q. 92. The letters-patent to Servis No. 249,407 clearly show

the element of lower sharpened flanges projecting from the lowe surface of the plate and penetrating the tie, do they not?

A. Yes.

X Q. 93. And as you read the specifications and interpret th drawings these lower flanges engage the tie parallel to its grain, d they not?

A. Yes.

X Q. 94. And does Aluminum Model O^{22} in your mind sub stantially show the metallic portion of the device shown and de scribed in letters-patent to W. L. Gould, No. 280,030, as shown i Fig. 5 thereof?

A. I should say that this model is probably substantially correc except that as I understand the disclosure in this Gould patent, th ribs or flanges on the bottom should not extend entirely across, bu should be separated into two parts, as shown in Fig. 2 of the draw ings.

X Q. 95. There is nothing in Fig. 5, however, to indicate an interruption in the lower flanges, is there?

A. Fig. 5 does not show whether the flanges are interrupted o not, but the patentee apparently makes a point of the inte
1223 ruption of said flanges as will be noted in the sentence be ginning with line 62 of the specification, which is as follows

"The inner ends of the beads *c* form shoulders to engage th wooden ties, and to thereby prevent the longitudinal movement o the plate relative to the tie and track."

When he comes to describe the structure shown in Fig. 5 he says

"Fig. 5 is a sectional view showing a sunken panel *g* between th two parallel beads *a* on the bottom of the rail, for the reception of rubber plate or cushion in such a manner that the sides of the bo tom of the rail will be allowed to come in contact with the top surfac of my improved metal plate, having beads *a*, grooves *c*, and flange *d*."

From this I would understand that the two beads or flanges show on the bottom of the flange in Fig. 5 are divided each into two se tions, as shown in Fig. 2.

X Q. 96. Well, whether separated or not, the interruption of th lower flanges shown in Fig. 2 is very slight is it not?

A. It is shown as amounting to about three quarters of an inch if the drawing is to scale.

X Q. 97. And the language of the specification between lines 9 and 100 describes these lower flanges or projections as beads on th lower surface and does not indicate any interruption, does it?

A. The language referred to says nothing about interruptions but at the same time there is nothing about it to indicate that th beads are continuous throughout the entire length of the plate.

X Q. 98. Now his aluminum model O^{22} taken by itself shows plate of metal with a rail bearing surface, a side flange or shoulde parallel to the rail and adapted for the rail flange to impinge again it, the upper surface having two parallel grooves its entire length and two lower projecting flanges adapted to engage in th
1224 tie, all of the flanges and grooves being parallel to the lengt of the rail and crosswise of the tie, does it not?

A. I should say that it shows such flanges as are in controversy, but hardly such grooves or channels, as the grooves shown in the model are so small that they would not have any material effect in attaining the functions of the grooves or channels in controversy. In fact, their location and dimension in the plate would be such as to seriously weaken it, and they would obviously be useless and worthless unless employed in connection with the rails shown in the Gould patent and provided with the co-operating beads *a* on the bottom thereof. The grooves of this plate are, in my opinion, obviously not the grooves or channels contemplated by the Wolhaupter patents in suit.

X Q. 99. But still the grooves are there and noticeable at once upon an inspection of the model?

A. Oh, yes, if you disregard their size and function you certainly can call them grooves.

X Q. 100. Letters-patent to A. M. Trude, No. 329,867, clearly show side flanges or shoulders against which the rail flanges impinge and which embrace the rail flanges, do they not?

A. If you refer to those on the clasp C, which is an entirely separate element from the plate A, I will answer your question affirmatively.

X Q. 101. Letters-patent to J. W. Currier, No. 379,210 show and describe a tie-plate or wear plate with lower projecting flanges to be driven into the tie and upper flanges at right angles to the rail against which the rail flange impinges, do they not?

A. The language of your question might be used to describe this Currier tie-plate.

X Q. 102. Letters-patent to E. H. Ashcroft, No. 388,240
1225 show a tie-plate seated in the tie and with side shoulders or flanges against which the rail flanges impinge, do they not?

A. The element you refer to in this patent is called a chair, and seems to be a sort of a hybrid construction that would be entirely impracticable for use. Such as it is however, it does show shoulders against which the flanges of the rail impinge.

X Q. 103. Does not this patent in Fig. 9 show a device inserted between the rail and tie which has side flanges or shoulders and a corrugated upper surface upon which the rail rests?

A. If we take the complete device made up of the non-corrugated sides and bottom portion, and the separate corrugated portion interposed between the bottom of the rail and the base portion of the chair, the language of your question might be applied to the structure of this Ashcroft patent, but I note he describes this connection as "somewhat yielding or elastic," and this obviously is not such a construction as is contemplated by the Wolhaupter patents in suit.

X Q. 104. Is there not shown and described in the Ashcroft specifications and drawings a metallic device placed between the rail and the tie and seated in the tie having a corrugated rail bearing surface, side flanges against which the rail flanges impinge and projecting upward, and down projecting flanges at each end adapted to clamp the tie on its sides?

A. If you consider that a "device" can be made of two or more

parts, the entire construction disclosed in the Ashcroft patent might be described by the language of your question.

X Q. 105. Letters-patent to Wm. Goldie, No. 457,584 disclose a tie-plate having a rail bearing upper surface with a shoulder or flange on one side against which the rail flange impinges and lower
1226 projecting toothed flanges or flanged teeth sharpened, at the sides of the plate and projecting downward and adapted to be driven into the fibre of the tie, do they not?

A. Yes, this Goldie tie-plate can be described by the language of your question.

X Q. 106. And letters-patent to W. Goldie No. 457,585 show a device named a Railroad Rail Brace, which consists of a metallic plate with an upper rail bearing surface, a lateral shoulder projecting from the upper surface, and lower projecting sharpened toothed flange projecting downward at one side of the plate and adapted to be driven into the tie, do they not?

A. The plate which you describe constitutes a part of the complete rail brace, and I suppose the parts *g* might be called toothed flanges, although they are rather in the nature of separate teeth.

X Q. 107. In your opinion is Defendant's Aluminum Model O[7] a substantially correct exemplification showing the configuration of the device shown in letters patent to Dockstader No. 462,399, and particularly Fig. 5, so far as the bottom construction is concerned?

A. It exemplifies substantially correctly one element of the five elements apart from the rails going to make up the complete "lock rail joint" disclosed in that patent.

X Q. 108. Does this aluminum model and do the patent drawings and specifications as to this element show a device to be spiked to the tie having an upper rail bearing surface separated into two distinct surfaces by a channel or groove running the entire length of the plate, with side shoulders or flanges against which the rail impinges and a lower projecting rib from the under surface parallel to the rail?

A. The language of your question might be applied to the
1227 main element of the five which together with the two abutting ends of the rails go to make up the complete lock rail joint which is essentially different in its function and mode of operation from the ordinary tie-plate.

X Q. 109. Would not this portion of the Dockstader device tend to hold the rail in place to prevent lateral movement of the rails and by means of the projections from the under surface engaging the tie prevent lateral movement of the plate and at the same time protect the tie from the rail wear all when spiked to the tie?

A. It would prevent the lateral movement of the rail, but owing to its pounding action on the tie, I do not see that it would be of any particular value in preventing wear on the tie. If the other elements foreign to a tie-plate construction were removed, it might have the action you suggest to some extent.

X Q. 110. Do not the letters-patent to F. W. Parsons, No. 465,492, show a plate for insertion between the rail and tie, having an upper rail bearing surface with a flange or shoulder thereon against which

the rail flange impinges and lower projecting sharpened teeth or toothed flanges for engaging in the tie?

A. The plate or chair of the Parsons patent can be described by the language of your question.

X Q. 111. Do not the letters-patent to C. H. Dunham, No. 469,386 show a railway tie-plate with corrugated upper and lower surfaces?

A. They show a proposed tie-plate would be of no practical value which has corrugated upper and lower surfaces.

X Q. 112. Do not letters-patent to W. Goldie No. 485,030 clearly show and describe a tie-plate with an upper rail bearing surface showing a groove or hollow parallel to the rail for the entire length of the plate, separating the rail bearing surface into two dis-
1228 tinct surfaces with a lateral shoulder or flange projecting from the upper surface and two lower projecting flanges parallel to the rail sharpened and adapted to be driven into and engaged with the tie?

A. The Goldie patent, with its exaggerated illustration of the concavity or depression on its upper surface might be described by the language of your question, but in connection with this answer, I would call the attention of the court to my discussion of this Goldie patent in my direct examination.

X Q. 113. Why do you say that the drawings of the Goldie patent exaggerate the depression or groove in the upper surface. Exaggerated in what way do you mean?

A. I mean that the depth of the concavity or depression is relatively greater than it would be in actual practice, as illustrated for instance in "Defendant's Exhibits B and C."

X Q. 114. Then you mean that the drawings of the letters-patent show this groove or hollow or depression to a greater extent than it was actually employed in the construction of tie-plates supposed to be made under the Goldie patent, is that right?

A. I take it that "Defendant's Exhibits B and C" are presumably constructed under this patent, and obviously the depression shown in these exhibits is relatively much less than that shown in the Goldie patent No. 485,030, and moreover, the depression shown in that patent is greater than would be necessary to secure the results mentioned in the patent, and I suppose that the amount of the depression was exaggerated somewhat in making the patent drawings in order that its existence would be readily noticed in a casual glance at the patent. It is a rather common practice in making pat-
1229 ent drawings to exaggerate such features a little in order that they will show up better in the drawings.

X Q. 115. And the effect of such exaggeration is to make in this instance the hollow groove or depression very noticeable and striking, is it not?

A. It is certainly more noticeable than it would be if the proportions shown in "Defendant's Exhibits B and C" were employed, although I should not call it especially striking.

X Q. 116. Which devices in configuration resemble each other more "Defendant's Exhibit C and Complainant's Exhibit 15," or

"Defendant's Exhibit C" and "Defendant's Exhibit Aluminum Model O^{24}"?

A. That depends upon which features of the devices you consider. If you take the tie penetrating flanges, "Defendant's Exhibit C" and "Complainant's Exhibit No. 15" resemble each other; but if you take the transverse flanges or grooves in the rail supporting surface, then "Defendant's Exhibit O^{24}" and "Complainant's Exhibit No. 15" resemble each other the more. The shoulders with which the rail flanges engage to prevent lateral movement of the rail are present in "Defendant's Exhibit C" and "Complainant's Exhibit 15" and are not present in "Defendant's Exhibit O^{24}."

X Q. 117. Which devices resemble each other the more closely in configuration, "Defendant's Exhibit C" and "Complainant's Exhibit 15," or "Defendant's Exhibit Aluminum Model O" and "Complainant's Exhibit 15?"

A. Again, this depends upon which particular features you consider. If you take the tie penetrating flanges, "Defendant's Exhibit C" resembles "Complainant's Exhibit 15" somewhat more than does "Defendant's Exhibit O" since the latter employs four of these tie-penetrating flanges as against the two shown in the other exhibits. If we take the matter of rail supporting surface,
1230 "Defendant's Exhibit O" resembles "Complainant's Exhibit 15," more than does "Defendant's Exhibit C." If we take the element of the rail abutting shoulders, then "Defendant's Exhibit C" resembles "Complainant's Exhibit 15" somewhat more than does "Defendant's Exhibit O," inasmuch as the two first mentioned exhibits employ the same design of shoulders. If we take the combined features of the tie penetrating flanges and the rail supporting flanges, then "Defendant's Exhibit O" resembles "Complainant's Exhibit 15," much more than does "Defendant's Exhibit C."

And thereupon an adjournment was taken to Saturday, July 16, 1910, at 10 o'clock a. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, July 16, 1910.

Met pursuant to adjournment.
Present: Counsel as before.

Cross-examination of the Witness McElroy resumed by *by* Mr. Reed:

X Q. 118. Which in your judgment resembles the more closely in configuration "Defendant's Aluminum Model Exhibit O^{24}" and "Complainant's Exhibit No. 15," or "Defendant's Exhibit Aluminum Model O^{3}" and "Complainant's Exhibit No. 15?"

A. Disregarding all questions as to the accuracy of "Defendant's Aluminum Model O^{24}," in some respects it resembles "Complainant's Exhibit No. 15" more than does "Defendant's Exhibit O^{3}," mainly in the fact that the tie penetrating flanges are more nearly

the same size and extend in the same general direction. I note, however, more similarity in "Defendant's Exhibit O^{3}" in
1231 that it is provided with customary square spike holes for the ordinary spikes, whereas "Defendant's Exhibit O^{24}" has circular apertures presumably intended for screw-spikes or bolts. I also note that "Defendant's Exhibit O^{24}" has a very large rib on the side opposed to the shoulder flange, whereas "Complainant's Exhibit 15" and "Defendant's Exhibit O^{3}" have no such rib. I also note that the stock beyond the shoulder is not reduced in "Defendant's Exhibit O^{24}," whereas it is in "Complainant's Exhibit No. 15" and Defendant's Exhibit O^{3}. The main distinction, however, between "Complainant's Exhibit No. 15" and "Defendant's Exhibit O^{3}" is in the size of the central tie-penetrating flange and in the fact that the tie-penetrating flanges are not transverse to the tie as they are in "Complainant's Exhibit No. 15" and "Defendant's Exhibit O^{24}."

X Q. 119. Do not "Defendant's Exhibit O^{24}" and "Complainant's Exhibit 15," have the common features arranged substantially in the same way and performing substantially the same functions of upper rail bearing surfaces in each instance separated into three rail bearing surfaces by two grooves or channels running the entire length of the plates, a side shoulder or flange against which the flange of the rail impinges, and lower flanges projecting from the bottom surface for the purpose of engaging the tie, the grooves, shoulder flanges and lower flanges in both instances being parallel to the rail and crosswise of the tie?

A. Waiving all questions as to the accuracy of "Defendant's Exhibit O^{24}," I will answer the question affirmatively.

X Q. 120. Referring to letters-patent to B. Reece, No. 494,692, and the aluminum model thereof "Defendant's Exhibit O^{11}," is there not clearly shown a tie-plate having an upper rail bearing surface, with side flanges or shoulders against which the rail
1232 impinges or abuts, and lower projecting sharpened flanges projecting from the lower surface for the purpose of engaging the tie?

A. If your question implies that there is a single rail supporting surface from which all three of the tie-penetrating flanges project, I cannot agree with your description, as I should say that there are rather three separate rail supporting surfaces connected, however, by the ends of the plate, and each one of these separate surfaces has the tie-penetrating flange projecting from its under side.

X Q. 121. But you do find shown in the specification and model exhibit the upper side flanges or shoulders and the lower tie-penetrating flanges exhibited do you not?

A. Certainly.

X Q. 122. And it is evident that the lower flanges penetrate the tie in the direction of the grain or length thereof, is it not?

A. Yes.

X Q. 123. And that method of having the lower tie-penetrating flanges engaging the tie in the direction of the length thereof is a

feature of all the devices shown in the three Wolhaupter patents-in-suit, is it not?

A. All three of the Wolhaupter patents in suit show the flanges extending in this direction, but that is certainly not a feature of the structure defined by the claims in controversy as none of them are limited to that particular arrangement of the tie penetrating flanges.

X Q. 124. But there is nothing in the drawings or specifications which states or shows that the lower flanges shall engage in the tie except lengthwise, is there?

A. There is no direct showing or suggestion of the tie penetrating flanges extending at right angles to the length of the tie, although the claims in controversy do not mention the direction of the
1233 tie penetrating flanges relative to the tie, and accordingly I would suppose that they were not limited to the particular direction shown.

X Q. 125. Letters-patent to W. W. Holmes, No. 495,807, April 18, 1893, show and describe a tie-plate with an upper rail bearing surface, side shoulders at each corner thereof on the upper surface against which the rail flange impinges, and lower projecting sharpened flanges for engaging in the tie parallel to the length of the tie, do they not?

A. Yes.

X Q. 126. Letters-patent to W. W. Worthington, No. 506,963, October 17, 1893, show an upper rail bearing surface with three narrow upward projecting flanges or shoulders on each side of the rail against which the rail flange impinges, and lower projecting flanges sharpened upon the under surface for engaging in the tie, do they not?

A. The shoulder flanges are not located upon the rail supporting surface, but at one side of it, and with this definite understanding as to the location of these shoulder flanges, I would answer the question affirmatively.

X Q. 127. Do not the upper flanges or shoulders project from the plate on the same plane as the rail bearing surface and is not each shoulder above a flange on the lower surface?

A. Yes, that is correct.

X Q. 128. Do not letters-patent to J. Churchward for Wear Plate, No. 508,086, November 7, 1893, exhibit an upper rail bearing surface, side shoulders against which the rail flanges impinge, and lower projecting sharpened teeth or short flanges arranged in two rows projecting from the lower surface for the purpose of engaging the tie?

A. Yes, you might describe it that way.

X Q. 129. And the rows of sharpened teeth flanges on
1234 the lower surface are immediately beneath the upper shoulder flanges are they not?

A. Calling attention to the fact that the upper flanges do not project from the rail supporting surface, I will answer the question affirmatively.

X Q. 130. And the lower rows of teeth flanges are adapted to engage the ties crosswise are they not?

A. The general direction of the rows is crosswise of the tie.

X Q. 131. Do not letters-patent to W. W. Holmes, for Railway Tie-Plate, No. 514,465, February 13, 1894, show a railway tie-plate with a rail-bearing surface having along its center in the direction of its length three cavities or recesses, side shoulders or flanges projecting from the upper surface of the plate parallel to the rail against which the rail flanges impinge, and lower projecting sharpened flanges on its lower surface adapted to engage in the tie lengthwise?

A. I hardly think I should call a two-piece structure like this a tie-plate in the ordinary sense of the word, as they are in all practical forms made of a single piece. However, the compound structure might be said to have the characteristics set out in your question.

X Q. 132. Do not letters-patent to W. W. Holmes for Railway Tie Plate, No. 514,466, February 13, 1894, show an upper rail bearing surface with side shoulders or flanges at each corner against which the rail flanges impinge and three lower projecting sharpened flanges on the lower surface adapted to penetrate the tie lengthwise?

A. The Holmes tie-plate might be described that way.

X Q. 133. Do not letters-patent to W. W. Holmes, No. 514,467, February 13, 1894, show an upper rail bearing surface with shoulders or flanges projecting lengthwise of the rail and
1235 against which the rail flanges impinge and two lower projecting flanges on the under side sharpened and adapted to engage the tie lengthwise?

A. The tie penetrating flanges are not sharpened, but otherwise the language of your question might apply very well to this Holmes structure.

X Q. 134. Do not letters-patent to J. A. Harris, No. 514,828, February 13, 1894, show a tie-plate with an upper rail bearing surface, two side flanges or shoulders on one side of the upper portion thereof lengthwise of the rail against which the rail flanges impinge, and lower projecting sharpened toothed flanges adapted to engage the tie?

A. Yes.

X Q. 135. And is not there shown in letters-patent to J. A. Harris for Tie-Plate, the same letters-patent, an upper rail bearing surface with two side flanges or shoulders on the upper part arranged parallel to the rail and against which the rail flanges impinge, and lower tie penetrating flanges or teeth from the under side sharpened and adapted to engage the tie in one instance, as shown in Fig. 5, parallel to the rail and crosswise of the tie and in another instance, as in Fig. 6, with two of the lower flanges at the ends adapted to engage the tie lengthwise and one toothed flange at the side adapted to engage the tie crosswise?

A. Yes.

X Q. 136. And is not the device shown in letters-patent to W. H. Wilson for Railroad Tie-Plate No. 522,867, July 10, 1894, when as-

sembled and placed in position, a device with an upper rail bearing surface having longitudinal ribs thereon and consequent grooves extending across the plate, on which ribs the rail rests, side shoulders against which the rail flanges impinge and lower tie penetrating flanges sharpened upon the lower surface engaging the tie crosswise?

1236 A. I hardly think I would describe it that way, as the elements B, shown detached in Figs. 7 and 8, have more of the characteristics of spikes than tie-plates and if you are going to bring in the spikes as a part of the plates of the prior art, you might find more pertinent references than those dwelt upon. In other words, I do not consider these elements B as a part of the tie-plate at all.

X Q. 137. The rail bearing surface in this device, however, exhibits longitudinal ribs upon which the rail bottom rests?

A. Yes, that is correct.

X Q. 138. And grooves or channels between the ribs extending clear across the rail bearing plate?

A. Yes.

X Q. 139. Letters-patent to D. Servis, No. 524,868, August 21, 1894, show side shoulders or flanges against which the rails impinge on the upper side, and tie penetrating sharpened flanges on the lower side, do they not?

A. Yes.

X Q. 140. Letters-patent to S. F. Clark, Tie-Plate, No. 529,854, November 27, 1894, show a side shoulder or flange against which the rail flange impinges on the upper side and tie penetrating flanges on the lower side, do they not?

A. While the parts *e* would ordinarily be called teeth, they might be called flanges, so I answer the question affirmatively.

X Q. 141. Letters-patent to T. R. Gabbel, No. 534,175, December 4, 1894, show clamping side shoulders on the upper surface under and against which the rail flange and side abuts and lower flanges on the lower surface sharpened and engaging in the tie, do they not?

A. I hardly think I should call the rail bracing flanges b^2 clamping members, but otherwise the question is correct.

1237 X Q. 142. Letters-patent to R. Morrell, No. 531,627, January 1, 1895, show on the upper side rail flange abutting flanges, and on the lower side teeth and flanges adapted to engage the tie, do they not?

A. Yes.

X Q. 143. And letters-patent to J. T. Stewart, for Railway Tie-Plate, No. 535,963, March 19, 1895, show upper shoulders against which the rail flanges impinge, and lower projecting flanges unsharpened to be seated in the tie, do they not?

A. Yes.

X Q. 144. Letters-patent to W. Chamberlin, "Tie-Plate," No. 538,817, May 7, 1895, show projecting flanges on the upper surface against which the rail flanges abut and lower projecting flanges on the lower side to engage in the tie, do they not?

A. Yes.

X Q. 145. Letters-patent to H. W. Avery, No. 574,773. January 5, 1897, show on the rail bearing surface, and as a rail supporting surface, ridges a rail flange abutting flange on the upper surface and sharpened tie penetrating devices on the lower side to engage the tie do they not?

A. This patent shows a freak sheet metal device intended to be stamped up which has rail supporting surfaces raised above the body of the plate, but they are not flanges, although they might be called ridges or corrugations, and I would hardly call the shoulders E flanges. Otherwise the language of your question in describing this theoretical device is correct.

Mr. Reed: The remaining patents offered in evidence by defendant's counsel are so plainly delineated in the letters-patent specifications and drawings that I do not care to cross-examine about them specifically, but I do not wish the omission to cross-examine
1238 thereon to in any way constitute an abandonment of the devices shown therein as anticipations.

X Q. 146. Is there anything in the blue-print drawings "Defendant's Exhibit KKK, Fig. 635," from the Eisenbahm-Geleise 1891, or "Defendant's Exhibit LLL, Figs. 661 and 662," from the same volume, which does not suggest that the groove in the rail supporting surface of the device therein shown, does not extend the entire length of the plate?

A. The showing of the drawings 635 and 662 is rather negative, inasmuch as both drawings are cross-sections of the rail supporting elements, they might show either cavities or channels. The showing of drawing 661 would indicate a channel.

X Q. 147. Do not the blue-print drawings, "Defendant's Exhibit CC Railroad Gazette, July 8, 1892, page 507," show a tie-plate having on its upper surface a shoulder or flange against which the rail flange abuts and on its lower surface projecting sharpened toothed flanges arranged in two rows or sets of three each and parallel to the rail and adapted to engage the tie crosswise of its length?

A. Yes.

X Q. 148. Is there not shown in "Defendant's Exhibit DDD, Railroad Gazette, Vol. 19, December 30, 1887, page 630," a device for use as a tie-plate which has an upper rail bearing surface, side shoulder or flange parallel to the rail against which the rail flange impinges and on the under surface lower projecting sharpened flanges for engaging in the tie crosswise thereof?

A. I have not examined the text describing this drawing, so that I cannot say that it is necessarily intended for use as a tie-plate, but that is what I would expect from the drawing. Your description of the question is correct.

1239 X Q. 149. Whatever construction is given to the drawings shown in "Defendant's Exhibit AA, Railroad Gazette, Vol. 22, June 6, 1890, page 299," there is enough shown in the upper left hand figure to indicate that the upper rail bearing surface of the plate has a cavity or hollow of some kind therein, and a side shoulder or flange against which the rail flange abuts, is there not?

A. Understanding that by the term "hollow or cavity" you distinguish from a channel extending all the way through, I will answer your question affirmatively.

Cross-examination of the witness McElroy closed.

No re-direct examination.

Examination of the witness McElroy closed.

JOHN HOWARD McELROY.

And thereupon an adjournment was taken subject to notice.

G. R. WILKINS,
Notary Public.

1240 UNITED STATES OF AMERICA,
State of Illinois, County of Cook, ss:

I, G. R. Wilkins, a notary public, in and for the County of Cook and State of Illinois, do hereby certify that the foregoing depositions of Charles R. Miller and John Howard McElroy, were taken before me pursuant to agreement, at the offices of Messrs. Poole & Brown, Suite 808 Marquette Building, Chicago, Illinois, beginning on Monday, June 20, 1910, at 10:30 a. m. and continuing by adjournment from day to day until completed on Saturday, July 16, 1910, as therein appears; that the depositions were taken on behalf of the complainant to be used on the hearing of a certain cause now pending in the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois in Equity, No. 29,294, wherein The Railroad Supply Company is the complainant and The Hart Steel Company and Guilford S. Wood, the defendants; that the parties to said cause were present at the taking of the same, complainant by its counsel, Col. Taylor E. Brown, and defendants by their counsel, Frank F. Reed, Esq., and J. Negley Cooke, Esq., as therein appears; that before deposing the said Charles R. Miller and John Howard McElroy, were by me duly cautioned and sworn to testify to the truth, the whole truth and nothing but the truth, in the cause aforesaid, and that said rebuttal depositions were reduced in writing on the typewriting machine by me from statements of the said Charles R. Miller and John Howard McElroy, and the same were duly subscribed to by the said witnesses in the presence of counsel and before me.

And I do further certify that I am neither attorney nor of counsel for any of the parties to the above entitled cause, nor related by blood or marriage to either of said parties or to said counsel, and am nowise interested in the result of said cause.

I further certify that my fees as notary public, and for typewriting, amounting to $297.25 have been paid by the complainant.

1241 I do further certify that the foregoing is a true record of the depositions taken and of the proceedings had before me, pursuant to the agreement aforesaid, between the dates mentioned.

In witness whereof, I have hereto set my hand and affixed my notarial seal, this 16th day of July, A. D. 1910.

[SEAL.] G. R. WILKINS,
Notary Public.

1242 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29,294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

PITTSBURGH, PA., Sept. 19, 1910.

Proceedings before me, B. D. Gamble, Deputy Clerk United States Circuit Court for the Western District of Pennsylvania, taken on behalf of the Complainant in the above entitled cause, pursuant to the notice hereto attached.

Present:

Frank F. Reed, Esq., Counsel for defendant.
Taylor E. Brown, Esq., Counsel for complainant.

And thereupon WILLIAM GOLDIE, a witness produced upon behalf of the complainant, having been first duly cautioned and sworn, upon oath testified as follows, in answer to interrogatories by Col. Brown:

Q. 1. Please state your name, residence, age and occupation.

A. My name is William Goldie; my age is 75; my occupation, I am engaged at present in manufactures of various kinds, and also employed as mechanical expert by the Dilworth-Porter Com-

1243 pany; residence, Wilkinsburg, Pa.

Q. 2. State whether or not you are the same William Goldie to whom the following letters-patent of the United States have been issued:

No. 426,530, April 29, 1890, Railroad Rail Chair.
457,584, Aug. 11, 1891, Railroad Tie Plate.
457,585, Aug. 11, 1891, Railroad Rail Brace.
485,030, Oct. 25, 1892, Tie Plate.
540,356, June 4, 1895, Tie Plate.
610,179, Sept. 6, 1898, Tie Plate.
631,039, Aug. 15, 1899, Tie Plate.

A. I am.

Q. 3. If you have made and patented improvements in various arts; state in a general way the extent of your work?

A. Well, beginning at the beginning, I patented several improvements in wood working machines. I then changed over and patented a large number of designs of spikes, tie-plates, rail braces and the mechanism necessary to produce them, and I then went into railway construction and took out a large number of patents in connection with them. That brings me up to date. I have taken out in my time about sixty different patents in all the various lines I have been connected with, in addition to a large number of construction patents, some eight or ten.

Q. 4. Are you trained and have you had experience as a mechanic, and if so, in what trades?

A. I have had a great deal of experience in connection with wood working machinery and in the last twenty years with steel working machinery, and have constructed and designed a great many machines for that work.

Q. 5. Where were you engaged in business in the year 1892 and the succeeding four or five years?

1244 A. Since 1889 I have been connected with Dilworth-Porter & Co. in the manufacture of tie-plates and in the mechanisms necessary to produce them, and the same in regard to railroad spikes.

Q. 6. You may state whether or not you ever manufactured or caused to be manufactured any tie-plates like those illustrated in the drawings of Letters-Patent No. 485,030 to Wm. Goldie, dated October 25, 1892?

A. I did. I had those manufactured by Dilworth, Porter & Co. and shortly after they got them ready to put on the market, I went out and sold them.

Q. 7. Who is Dilworth, Porter & Co.?

A. It is a corporation organized under the laws of Pennsylvania, and engaged exclusively in the manufacture of spikes and tie-plates.

Q. 8. Where is its office and principal place of business?

A. On the South Side. The works are located between Fourth and Sixth street-, fronting on Bingham street, the other front being on the Monongahela River.

Q. 9. And where was this concern located in 1892?

A. At the same place.

Q. 10. And in 1892 at the time that you started the manufacture of the tie-plates shown in this patent No. 485,030, what facilities did Dilworth, Porter & Co. have for their manufacture?

A. They had a 16″ rolling mill. They had two presses or punching machines and a pair of alligator shears which was used for cutting the plates from the bar into the proper widths, the length of the plate being determined by the width of the bar.

Q. 11. And what was the maximum capacity of Dilworth, Porter & Company, for the manufacture of those tie-plates at that time?

A. At that time the capacity of the rolling mill I couldn't

1245 give definitely, but approximately it would be from 50 to 60 tons. I should think about 50 tons would be the average per day.

Q. 12. When the manufacture of your tie-plate of this pattern shown in Letters-Patent No. 485,030, was begun, did you have anything to do personally, with the getting up of the rolls and any other machinery required for the fabrication of the tie-plate?

A. This was all done under my direction.

Q. 13. Do you recall a man by the name of Leonard Zimmerman, a steamfitter by trade, who worked in the tie-plate department of Dilworth, Porter & Company, about 1892?

A. I do.

Q. 14. Do you remember a roll turner by the name of John

Ambler, who worked for Dilworth, Porter & Company, about that time?

A. I do. I was in consultation with him about every day in connection with the turning of the rolls.

Q. 15. And do you remember a roller by the name of Andrew Cullen, who was employed by Dilworth, Porter & Company about that time?

A. I do. I was also in consultation with him.

Q. 16. There has been put in evidence in this case, Mr. Goldie, a tie-plate marked "Defendant's Exhibit B," and another tie-plate marked "Defendant's Exhibit C." Please look at these two exhibits and state whether or not you recognize them, and if so, state what they are.

A. They appear to be the plates that we manufactured at that time under what was called the rib tie-plate patent.

Q. 17. And by the rib tie-plate patent, do you mean the Goldie patent No. 485,030?

A. I do.

1246 Q. 18. These two plates, "Defendant's Exhibits B and C," which you have just identified, have evidently been in track somewhere and in use, so that they are not in exactly the same condition as when they came from the roll. Is that a fact?

A. That is. They are worn some.

Q. 19. Now please look at the tie-plate which I hand you, and state what that is?

A. That is one we evidently manufactured under the same patent before enumerated.

Mr. Brown: Complainant's counsel offers in evidence as an exhibit, the tie-plate identified by the witness, and the same is identified as follows: "Complainant's Exhibit No. 144, Goldie Tie Plate, Patent No. 485,030, B. D. Gamble, Commissioner, Sept. 19, 1910."

Mr. Reed: Objected to without further proof of its origin and date of manufacture.

Q. 20. I notice, Mr. Goldie, that your patent No. 485,030, shows the two ends, that is, the portions outside of the spike holes, to be of even thickness so that the extreme edge of each end is the same thickness as the body portion of the tie-plate; whereas the "Defendant's Exhibits B and C," and the complainant's exhibit, just introduced, No. 144, show this portion of the plate to be tapered at each end toward the end margin. Please state what is the fact as regards to the manufacture of these plates whether they were made in this regard exactly like the patent, or not.

A. They were not made exactly like the patent in the end thickness being the same. That was the case with all out tie-plates, I believe.

Q. 21. Then as I understand you, each end of the tie-plate was a tapered end.

A. Slightly, very slightly.

1247 Q. 22. I call your attention to the portion of the tie-plate body between the two ribs, noting that it is concave slightly on the top surface and correspondingly convex on the bottom

surface. Please state what your object was in designing that particular construction?

A. At that time the rails were slightly convex on the bottom of the flange of the rail, and I put that depression in for the purpose of giving the rail a more secure seat upon the tie-plate, and upon doing that and depressing this (indicating the under side of the plate "Exhibit No. 144"), I made it convex on the bottom slightly, for the reason that I wanted to get a support in the middle; thereby rendering it more difficult to buckle the plate when it came into use, the plate being applied when the tie to which it was applied was in the track and at first it rested entirely on the point of those ribs. When it came down, when it was forced down by the action of the train passing over it, it got a support in the middle from this convex portion and relieved the pressure on the extreme end and had a tendency to prevent the plate from buckling, as that time, owing to economic reasons we could not induce the railroads to purchase a heavier plate than about one-fourth of an inch and this gave it support in the center.

Q. 23. The plate then was made of even thickness throughout, I take it, the degree of convexity of the under surface corresponding with the amount of concavity in the upper surface. I am referring, of course, to that portion of the plate between the spike holes. Is that correct?

A. It was of uniform thickness between those spaces.

Q. 24. The concave portion in the upper surface of these plates extending from side margin to side margin, was not formed, I take it, by cutting out the metal simply, but simply by the process of rolling. Is that correct?

A. That is correct.

1248 Q. 25. Please state whether or not you ever made or had made for you, any of these tie-plates in which the upper surface was provided with a groove or channel or depression or concavity formed by cutting into the metal?

A. We manufactured none whatever of that kind.

Q. 26. Can you recall about when and to whom the first sale was made of tie-plates of this pattern we have been speaking of, like "Defendant's Exhibits B and C" and "Complainant's Exhibit No. 144?"

A. The first sale was made to the Boston & Maine. We made several sales of small quantities to various roads; some to the Santa Fe; the first, I think, 1,000 and 5,000 afterwards. Some went also on to the Baltimore & Ohio. They were all in small quantities.

Q. 27. About when was the first sale made?

A. Shortly after the patent was issued. I can't just remember the date, but we commenced making the rolls as soon as I made application for patent within a week or two afterwards.

Q. 28. The patent states that the application was filed on March 17, 1892, the patent bearing date October 25, 1892. I understand you then to say you started making the rolls shortly after March 17, 1892?

A. We commenced getting up the rolls at that time, and I think

perhaps it might have been two months after that until we got the mechanism in order to complete the manufacture.

Q. 29. So that your first sales of this type of tie-plate were probably in the late summer or fall of 1892?

By Mr. Reed: Objected to as leading.

(Question withdrawn.)

Q. 30. Please state whether or not you had anything to do with the introduction and sale of these tie-plates?

A. At that time I had a great difficulty in inducing the railroads to consider the purchase of tie-plates at all.

1249 Q. 31. There were other tie-plates on the market at that time, were there not?

A. There was the Servis plate and the railroads at that time appeared to be very much prepossessed in its favor and opposed to any plate that did not have flanges that anchored in the ties longitudinally with its grain.

Q. 32. Did you go about the country in your endeavors to introduce and sell this tie-plate?

A. I did. I was out the greater portion of my time with the exception of times when I was recalled for the purpose of making changes in the machines.

Q. 33. And did Dilworth, Porter & Company make any effort other than through your personal services, to place this tie-plate upon the market and introduce it into use on railroads?

A. They did. They advertised it and also had agents in the large cities and Boston and Chicago and St. Paul, I think that was all the agencies they had at that time.

Q. 34. How long was this tie-plate in the form show- in these Exhibits you have identified, manufactured without change in construction?

A. To the best of my recollection, for about a year we manufactured the plates with the depression on the upper side and the convex on the under side, and then we changed the turning of the rolls and made the plate flat both on top and bottom. That is between the spike holes. The seat of the plate was flat. The portion outside of the spike holes was tapered.

Q. 35. Please look at the blueprint marked "Defendant's Exhibit Z-Z," being print No. 56,348, approved for experimental use, Joseph T. Richards, Engr. M. W., Jany. 21, 1899," and look at the sectional views or end sections, of which there are six, one above the other, and state in what respect those section views agree with or differ from the flat plate you mentioned in your last preceding answer, except as to dimensions.

1250 A. They do not differ in any way excepting they are longer and thicker plates.

Q. 36. So that for about a year Dilworth, Porter & Company manufactured the Goldie Plate with two ribs on the under side, a shoulder on the upper side, and a slight concavity parallel with the shoulder on the upper side, and a corresponding convexity between the ribs on the under side, and then changed to the plate such as

shown in "Defendant's Exhibit Z-Z," which has no concave and convex portions, but which is flat on its top and bottom surfaces. Is that correct?

Objected to, as leading and as attempting to cover by a statement of counsel, matters that have already been testified to.

A. That is correct.

Q. 37. By what name was the concavo-convex style of plate known?

A. The Goldie Rib Tie Plate.

Q. 38. And by what name was the straight surface tie-plate that you next manufactured, known; that is, the tie-plate you have been spoken of, and which is shown on this blueprint, "Defendant's Exhibit Z-Z"?

A. We called that the same plate as the other, to my recollection.

Q. 39. And for how long did you continue to manufacture the second, or straight surface Goldie Rib Tie plate?

Objected to as leading and not rebuttal.

A. I couldn't definitely state, but to the best of my recollection, it was about two years. I am not sure, but I think about that.

Q. 40. And why was the manufacture of the Goldie Rib Tie-plate abandoned?

Objected to as irrelevant, immaterial, incompetent and not rebuttal.

1251 A. For the reason that about that time I designed another plate that we considered better, and my observation of the former plate in use in the track, convinced me that it would not be a permanent success.

Q. 41. What was the name of the new tie-plate to which you refer?

A. It was called the Goldie Claw Tie Plate. I might say the principal reason which induced me to believe it would not be a permanent structure, was it did not adhere to the tie, whereas the claw plate did.

By Mr. Reed: Last objection renewed and motion to strike out on the same ground.

Q. 42. Please look at the Goldie patent No. 540,356, showing in Figs. 1 and 2, two different styles of Claw tie-plates. State whether or not, you have manufactured any plates like those shown in this patent?

A. We made a large quantity of the plates shown in Fig. 1, but very few, simply a few sample plates of Fig. 2. To my knowledge there was not any of this style (pointing to Fig. 2) of plate sold. We made a few samples.

Q. 43. And the claw plate, such as illustrated in Fig. 1, is that on the market today?

A. It is, with some variations. That is the base patent on the claw plate. It was modified afterward.

Q. 44. Now prior to the introduction of the Goldie claw plate, and while you were selling the Goldie rib plate, have you any idea of the total number of the Goldie rib plates, of both designs, concave top and flat top, that were manufactured and sold?

A. As I sold about all of those plates that were sold, I should say approximately 200,000 of both kinds; of the kind of the concave and convex sides, I don't think there was over 25 per cent of this kind which has been introduced in evidence (referring to plate "Exhibit No. 144").

1252 Q. 45. Do I understand from your last answer that it is your opinion that not over 25 per cent of the total number of plates sold, were like the plates introduced in evidence and marked "Complainant's Exhibit 144," and "Defendant's Exhibits B and C"?

A. That is the best of my recollection.

Q. 46. Do you remember about how many different railroads were supplied by purchase or otherwise, with tie-plates having the concave and convex feature, such as shown in these exhibits, No. 144 and B and C?

A. I could not say specifically, but I should judge twenty-five, perhaps thirty-five.

Q. 47. And do you know whether these railroads put these plates in track and gave them a test?

A. I know where a large portion of them went.

Q. 48. Do you know whether any of these tie-plates were furnished to the railroads without expense, for the purpose of test and introduction?

(Objected to as immaterial.)

A. There was quite a number of them furnished for experimental purposes, for the railroads to find out whether they were suitable for their use or not.

Q. 49. Do you know of any of these Goldie rib plates that were installed in the Pennsylvania Railroad tracks at the crossing of Liberty street at the Union Depot?

A. I do not recall that there was any of these rib plates furnished at this place. There was of the claw. They were all claw plates, as I remember.

Q. 50. Do you know of any of the Goldie rib plates ever being sold or used by the Pittsburgh & Lake Erie Railroad Company?

A. I am positive that they never used any of the Goldie claw rib plates on the Pittsburgh & Lake Erie Railroad. They used the Goldie claw tie-plate very largely, and do yet.

1253 Q. 51. Did you sell, or do you know of anybody selling any Goldie rib plates to one Rodney Evans, formerly the purchasing agent of the Pittsburgh & Lake Erie?

A. I do not.

Q. 52. During the time that you were making the Goldie rib plates, having the concavo-convex surface, how deep at the deepest portion was the concavity?

A. It was very slight; about 3/32 of an inch. I think that was the original drawing, three thirty seconds.

Q. 53. Was it ever as deep as ⅛ of an inch?

(Objected to as leading.)

A. No.

Q. 54. John Ambler, a witness for the defense, in answer to Q. 13, stated as follows:

"There was a concave of about ⅛ inch, I believe, on the top of the plate and a necessary projection on the underside, to maintain the thickness. That portion of the plate over which the rail was to be placed."

State whether or not you agree with or differ from Mr. Ambler in this matter?

A. I differ from him. Three thirty-seconds was the extreme depth that there ever was in any of those plates. We had some that were only a sixteenth.

Q. 55. Mr. Ambler, on cross-examination, in answer to cross-questions 53 and 54, stated as his idea the reason why the Goldie rib plates were abandoned and the claw plate adopted in its place was:

"The customer, meaning the railroad companies, preferred the claw plate."

How does that correspond with your understanding in the matter?

A. That is correct.

Q. 56. Mr. Goldie, throughout the record in this case, there have been various names given to tie-plates associated with yourself, such as the Goldie plate, Goldie spring plate, Goldie rib plate,
1254 Goldie cushion plate, Goldie flange plate, Goldie claw plate, and also Glendon plates, Glendon rib plates and Glendon flange plates. I wish you would look at the blueprint copy of "Complainant's Exhibit No. 138, Miller sketch," which shows sections of tie-plates illustrated in seven Goldie patents, to which reference has been made in this examination, and state the trade names, or shop names, that were applied to these various kinds of plates. (See "Complainant's Exhibit No. 138," Miller Sketch, at page 486.)

A. Design 426,530, we simply called that the Goldie plate. We manufactured very few. The next one, 457,584, we called that Goldie Claw plate. It was manufactured by drop forging process. It was not rolled. This 457,585, we did not manufacture any of those. This, No. 485,030, was called the Goldie Rib plate. 540,356 was still called the Goldie Claw plate same as 457,584. No. 610,179 was called a Goldie Flange plate. No. 631,039, the Glendon Flange plate. There is no claw plate on this drawing as we manufacture it now.

Q. 57. By what name are the Dilworth, Porter & Company mills known?

A. The Glendon rolling mills.

Direct examination closed.

Cross-examination by Mr. Reed:

X Q. 58. Mr. John Ambler had charge of the rolls at which the tie-plates were rolled at Dilworth, Porter & Company mills in 1892 and 1893, did he not?

A. Yes, that is right.

X Q. 59. And did he assist also in the preparation or turning of the rolls during that period?

A. He did about all the turning of the rolls at that time in connection with tie-plates.

X Q. 60. When Mr. Ambler stated in his deposition that
1255 in these Goldie rib plates, which had the top cavity, that there was a concave of about ⅛ inch, he was only 1/32 of an inch in error, according to your recollection?

A. No. We diminished this a sixteenth of an inch. The design was furnished by Mr. Hunter, who was superintendent of the works at that time.

X Q. 61. Have you examined critically the drawings as to this style of plate, since they were first prepared?

A. I have not examined them for a great many years; I think not after we discontinued the use of that plate.

X Q. 62. This cavity on top always ran the entire width of the plate, did it not?

A. It did.

X Q. 63. Have you consulted any memoranda or books as to the dates of the first sales of the concave Goldie Ribbed tie-plates in connection with this examination, or do you rely simply on your general recollection?

A. Largely on my general recollection, although I have looked up what I was doing during the years we were making those plates. I referred to my expense books. That is two or three years ago, before this suit was begun.

X Q. 64. But you have not refreshed your recollection as to dates, quantities or names by consulting any books or documents or memoranda in connection with this examination?

A. I have not.

X Q. 65. Would it not be possible that you were mistaken in putting the time of manufacture in the beginning for the Goldie concave rib plate after you made application for letters-patent?

A. I think not, but I have some documents that I could refer to, I think. I think I have some documents that I could establish that by.

X Q. 66. I will ask you to refresh your recollection, and
1256 after having done so, give us as accurate a statement as possible of the first manufacture of the concave Goldie rib plate and of the first sale of that style of plate.

A. I will.

X Q. 67. You stated that you sold the Goldie concave rib plate to between 25 and 35 different railroads, if I understood you correctly. Is that right?

A. No, it is not correct. A very large portion of the roads that I specified, the plates were furnished to them in small quantities in

three to five hundred for experimental purposes. The sales did not reach anything like 25 or 35.

X Q. 68. Then you supplied the concave Goldie rib plate to between 25 and 35 different railroads?

A. To the best of my recollection. I don't remember all the roads I visited.

X Q. 69. Could you tell us how many of these different roads you made sales of these different plates to?

A. I could not.

X Q. 70. You recall having sold to the Boston & Maine Railroad?

A. Yes.

X Q. 71. And that was the first sale you made as you recall it?

A. That I recall. The Old Colony got some about the same time, but the large order, I forget just how many thousand it was. They were used when the Boston & Maine constructed its terminal; they got quite a large quantity.

X Q. 72. You mean tthe terminal of the Boston & Maine Railroad in Boston, Mass.?

A. Yes.

X Q. 73. And you also sold some to the Atchison, Topeka & Santa Fe System?

1257 A. Yes, that is right, and the Baltimore & Ohio got some.

X Q. 74. As you recall it, did you make more than one sale or supply to the Santa Fe Railroad?

A. I think so. To a branch of the Santa Fe that ran from Topeka to Leavenworth. As I remember there was 5,000 went on to that. I think there was some sold after that.

X Q. 75. Now did the Goldie concave rib plates that were sold and supplied to the Boston & Maine and the Old Colony and the Santa Fe Railroad go into track?

A. They did. I superintended putting in quite a quantity of them.

X Q. 76. Was there a sale of the Goldie concave rib tie-plate to the Baltimore & Ohio Railroad?

A. I couldn't say whether that was a sale or not. I went and saw to putting them in.

X Q. 77. Where were the plates of this kind supplied to the Baltimore & Ohio Railroad installed?

A. Between here and Wheeling.

X Q. 78. Where were the plates that were supplied to the Old Colony Railroad installed?

A. In the vicinity of Boston. I think near a place called Rogson, applied under the direction of Newman Collins, road master.

X Q. 79. Where were the installations of this kind of plate made in the Santa Fe System?

A. Near Topeka.

X Q. 80. That is, that you know about personally, were installed near Topeka?

A. Yes.

X Q. 81. Other plates of this kind may have been installed by the Santa Fe in other parts of its system?

A. Oh, yes.

X Q. 82. Now, do you recall the name of any other rail-
1258 road to which Goldie concave ribbed plates were supplied? If so, please give the names and where they were installed, if you recall?

A. I could not do it without consulting the books, for the reason that I went out and introduced them to the engineering departments of the railroads, and tried to induce them to give an order, and unless I was requested to go and superintend the installation of them, I would not know.

X Q. 83. Do you recall installing or supervising the installation of this kind of tie-plate in any other roads than those you have named?

A. No, I could not, that I superintended the installation.

X Q. 84. Have you any memoranda or books that would enable you to give the names of any additional railroads to which the Goldie concave rib tie-plates was supplied or in which this kind of plate was installed?

A. I made no distinction between the plate made under the patent and the one with the flat surface. I didn't keep any distinct recollection of when one terminated and the other began, but I think I can find it, and I will endeavor to do so if you want it. The plate having become obsolete, I have discharged the thing altogether from my mind.

X Q. 85. I will be very glad if you can this evening, or before the session tomorrow, look up such memoranda or books as you may have access to, and give us as full a statement as possible of the roads to which the Goldie concave plate was supplied, or in which it was installed, with the dates and quantities.

A. It will be difficult to do that, for the reason that there was no distinction in the sales made between the flat top plate and the concave. They were all entered as Goldie rib plates. It will be difficult, but I will endeavor to get what you want.

1259 X Q. 86. But the plates that you have been testifying about that were sold to the Boston & Maine, the Old Colony, the Atchison, Topeka and Santa Fe and the Baltimore & Ohio Railroads, were the Goldie concave?

A. I am quite sure they must have been.

Adjourned until ten o'clock Tuesday morning, September 20, 1910.

PITTSBURGH, PA., Sept. 20, 1910.

Met pursuant to adjournment.

Present: Counsel as before.

Cross-examination of the witness Goldie, is resumed by Mr. Reed:

X Q. 87. Have you made search for the memoranda, data and books that was referred to in the examination yesterday and requested? If so, what have you found, if anything?

A. I have not found anything definite. I kept no record of the

sales, as that was kept in the general office, and my duties when on the road were to interview the chief engineers, the superintendents and general managers and prepare the way for the introduction of the plates. The matter was then taken up and referred to the purchasing agent, who communicated directly with the firm of Dilworth, Porter & Company.

X Q. 88. You were a sort of voice crying in the wilderness?

A. Yes, I was doing missionary work principally.

X Q. 89. Do you wish to correct any statement that you made with reference to the sale of these plates to the Santa Fe system? If so, you make the correction.

A. I do. The plates that were sold I find by reference to the books of Dilworth, Porter & Company, that they were shipped in different lots. I made arrangements for about 5,000 plates, but did
1260 not know where they were going to be placed or whether they would be on one division or on many. I find they were shipped to different points, and I am not sure whether they were rib or claw plates.

X Q. 90. Are you enabled by this investigation to refresh your recollection in any way as to the first sale of Goldie plates like "Defendant's Exhibits B and C" to the Santa Fe Road? If so, please give all the information you can.

A. The only means that I have of refreshing my memory is by reference to the books of Dilworth, Porter & Company, which I presume will be produced.

X Q. 91. Well, is there any doubt in your mind that there was very early in the manufacture of the Goldie concave rib plates, a sale or supply of such plates like "Exhibits B and C," to the Santa Fe system?

A. I know positively that the one thousand plates that was sold at first were certainly those as shown in the patent with the depression on top and the convex surface between the ribs.

X Q. 92. Can you state with any more accuracy the date of the sale of the plates of this description to the Santa Fe system?

A. I cannot, as I did not charge my memory with the particular dates and the time is so long ago that the only method I could reach was by reference to the books of Dilworth, Porter & Company.

X Q. 93. Do you recall with what official or representative of the Santa Fe system, and at what place this sale of the 1,000 Goldie concave rib plates was made?

A. I interviewed so many of the officials that I could not say from memory who it was that gave the order, but presume that it was the purchasing agent at that time, and I don't remember his name. I might say that I talked with Mr. Mudge, he was
1261 general superintendent at Topeka, and with Mr. Robinson and Mr. Dunn, and Mr. Parker, all were officials of the Santa Fe at Topeka. I rather think the order would come from the purchasing agent in Chicago. I did not get the order personally.

X Q. 94. And your statements in reference to all of the sales and furnishing of Goldie concave rib plates to various roads that you gave yesterday, are the result of general recollection, and not

founded upon any memoranda or documents or notes made by you at the time?

A. That is right.

X Q. 95. Has your investigation since adjournment refreshed your recollection so that you can give the names of any additional railroads to which the Goldie concave rib plates were either sold or supplied? If so, please give the names and any information that you have relative to such sale or supply?

A. I would say that we made no distinction between the Goldie plate with the concave surface and convex bottom; we made no distinction between that and the ordinary rib plate with the flat surface. When I was talking tie-plates the first year, I talked strongly on the advantages of the concave surface plates, and to the best of my recollection, the great majority of the plates with that concave surface was sold during the first year. We gradually grew out of it and furnished to our customers the plate with the flat surface, flat bottom and the ribs, and there was no line of demarcation between the two plates. They were called simply Goldie Rib tie-plates. I cannot add the names of any additional roads.

X Q. 96. But for at least the first year after you began the manufacture of the Goldie concave rib plate, you continued to sell and supply that plate exclusively?

A. No, I would not say exclusively, for I can't remember, but I am satisfied that the majority of them were of that type.

1262 X Q. 97. And after you adopted the flat surface plate, for a period you continued to manufacture and supply both kinds, the concave and the flat?

A. To the best of my recollection, we did. Some of them liked one kind and some the other.

X Q. 98. Does Fig 2 on the drawings attached to specification for Letters-Patent No. 485,030, October 25, 1892, to W. Goldie, show properly and accurately the relations between the rail, and the plate when in position in track?

A. I think it does, although I would say that perhaps if you go down, use a micrometer, you take it in connection with the sizes, this (pointing to the patent drawing in question) might show a greater depression than what existed in the plate as manufactured. It seems to me in patent drawings it is usual to make the figure special, perhaps enlarge it a little and make it prominent. It may have been done in this case, although by inspection I couldn't say that it had been done by inspection of the drawing. I could by measuring it with the proper instruments.

X Q. 99. But when the plate and rail in this device were in track, it was intended to be, and there was, a space between the bottom of the rail and the bottom of the cavity?

A. That is correct.

X Q. 100. And this shows both in the drawings and the plates as manufactured, of this kind?

A. It does.

X Q. 101. And this space in the cavity between the bottom of the

rail and the top of the plate, existed in the plate and between the plate and the rail when in position in track, clear across the plate?

A. Correct, longitudinally with the rail.

X Q. 102. Could you state whether "Exhibits B and C,"
1263 showed a cavity with 3/32 inch depression, as originally made, or 1/16 depression in the cavity?

A. I can't because it is worn. I can't tell the amount of wear that has taken place in those plates.

X Q. 103. But it is perfectly apparent, is it not, from an examination of these two plates, "Defendant's Exhibits B and C," that the bottom of the rail did not come in contact with the top surfaces of the cavities?

A. It certainly is.

X Q. 104. And that is a fact in these plates, although each one shows unmistakable evidence of wear on the top surface of the plate outside of the cavity?

A. That is certainly right.

X Q. 105. What would you *saw* as to the depth of the cavity or depression in "Complainant's Exhibit No. 144?" What is its extent?

A. I should say it is a trifle over a sixteenth. Of course, light, you know shows very large, but in my estimation it is a trifle over 1/16. I don't think it is 3/32.

X Q. 106. Well, "Complainant's Exhibit 144," was evidently manufactured after the depth of the cavity had been diminished?

A. Yes.

X Q. 107. And from an examination of "Complainant's Exhibit No. 144," it is clear that this plate has never been used in track, is it not?

A. It has never been used in track.

X Q. 108. As shown in the drawings attached to specifications of Letters-Patent No. 485,030. October 25, 1892, to W. Goldie, the depression or cavity or shallow groove is noticeable in all the four drawings, is it not?

A. It is.

X Q. 109. And in your judgment would the existence of such shallow depression, cavity or groove, clear across the length
1264 of the plate appear to any ordinary observer who looked at the drawing?

A. I certainly should say so.

X Q. 110. And these drawings would clearly and at once suggest to any ordinary person who looked at them in the ordinary way, the existence of a groove or cavity in the plate, extending clear across the plate lengthwise, and leaving a space between the bottom of the rail and the bottom of the cavity, would it not?

Mr. Brown: The question is objected to as incompetent and not calling for the best evidence, the patent drawing speaking for itself, to any person capable of reading the drawing.

A. It certainly would.

X Q. 111. And as matter of fact, when the plates of this description were manufactured, and as they were manufactured and

placed in track, there did exist clear across the plate lengthwise, in this groove or cavity, a space between the bottom of the rail and the bottom of the cavity?

A. There did exist a slight space between.

X Q. 112. Referring to the drawings annexed to specification and Letters-Patent No. 540,356, dated June 4, 1895, W. Goldie, is it not a fact that Figs. 2 and 3 show clearly a tie-plate with a groove or cavity extending lengthwise across its upper surface, so that when the plate and rail are in position, there is a space clear across the length of the plate, between the bottom of the rail and the bottom of the cavity or groove?

A. It does in Fig. 2 and Fig. 3. It shows a depression between the bottom of the rail and the tie-plate.

X Q. 113. And these two figures or drawings show a space in that way between the bottom of the rail and the bottom of the cavity extending clear across the length of the plate?

1265 A. They do.

X Q. 114. How many of the plates made by Dilworth, Porter & Company, under this patent No. 540,356, had the cavity, depression or groove, as shown in Figs. 2 and 3 of the drawing?

A. I cannot say, further than that there was very few. The rolls were turned to make some of those, and at that time we were abandoning the idea of the utility of the depression and I am satisfied there never was a plate sold under this patent, having those distinctive features.

X Q. 115. But Dilworth, Porter & Company, did prepare rolls to manufacture a plate of this description, which we will refer to as the Goldie claw, with a cavity or groove in the upper surface, as shown in Figs. 2 and 3 of the drawings?

A. The rolls were prepared, all rolls could in a very short time be adjusted for the others. It was simply a question of turning a slight depression in one roll, and a corresponding projection on the other, and the rolls could be and were used for the purpose of manufacturing a plate such as shown in Fig. 1 of the patent, 540,356.

X Q. 116. But as a matter of fact, rolls were prepared by Dilworth, Porter & Company, for the production of plates under this claw patent, which had the cavity or depression in the upper surface, as shown in Figs. 2 and 3, and some plates were actually rolled of that description?

A. I would not be positive that the plates, the few that we manufactured, were produced on the rolls. I am under the impression that they were produced by a drop forging process we were doing at that time, making quite a number of plates special by that process, the drop forging process, from flat steel bars.

X Q. 117. Please refresh your recollection, as carefully
1266 as you can, and state whether or not Dilworth, Porter & Company produced, or had rolls adapted to manufacture the claw plate with the cavity or groove in the upper surface, substantially shown in Figs. 2 and 3 of the Letters-Patent referred to. I want your best recollection on that subject.

A. At that time I was on the road, doing missionary work, and

some times away for approximately three months at a time, and I could not say positively whether the rolls were made adapted to make that depression or convexity or not. I think perhaps they might have been, and I do not distinctly recollect seeing the rolls, but I am satisfied they were some plates made with that depression.

X Q. 118. You mean, of course, claw plates.

A. Claw plates. We made a large number of them at that time by a drop forging process.

X Q. 119. You mean you made a large number of claw plates with the depression by the drop forging process?

A. Previous to getting up the rolls.

X Q. 120. And then you cannot state positively whether or not rolls were prepared to make the claw plate with the depression, but your best recollection is that such rolls were prepared?

A. I know it was talked of, but I have no positive knowledge of that being done.

X Q. 121. But your best recollection and information would be that it was done?

A. I think it might have been.

X Q. 122. What was done with the claw plates with the depression, that were made, either by the drop forging process or the rolls?

A. There was never any of them taken out and offered for sale, to the best of my recollection.

1267 X Q. 123. Were any claw plates, with the depression, placed in track anywhere for any purpose?

A. Not that I know of.

X Q. 124. Were any claw plates with any depression furnished to any railroads for any purpose?

A. Not to my knowledge.

X Q. 125. What was done with the claw plates with depressions on top, that were manufactured?

A. I think they were ultimately scrapped. They lay around the works for some time. We had abandoned the idea of the utility of the depression about that time.

X Q. 126. But I understand that at the time the claw plates with the depression were being manufactured by Dilworth, Porter & Company, you were absent for quite a long period?

A. I was very frequently absent, and for long periods at a time.

X Q. 127. So that it would have been very easy for Dilworth, Porter & Company to have shipped or supplied some quantity of these claw top depression plates to railroads without your knowledge, would it not?

A. I do not think so, as I was kept posted at all times in regard to what the firm was doing in regard to tie-plates. It would not have been done without having been brought to my notice.

X Q. 128. Inasmuch as you do not know whether rolls were prepared for the manufacture of claw top depression plates, is it not a fair conclusion that there might have been some disposal of some few of these plates, at least, without its coming to your attention, or without making such an impression upon you, that you do recollect the incident after so many years?

A. I do not think it possible for the reason that every thing connected with the manufacture of tie-plates was originated by myself or if any changes were suggested by the general manager or
1268 general superintendent, they were first brought to my notice, for my approval.

X Q. 129. But these claw top depression plates had been manufactured and were on hand, and it was not necessary that Dilworth, Porter & Company consult you before disposing of some quantity of them, was it?

A. To the best of my recollection there was simply so few of them struck off that it would not have been any object to Dilworth, Porter & Company or myself to have attempted to dispose of them, and I am satisfied that such a thing never was done.

X Q. 130. What I asked was whether or not it was necessary for Dilworth, Porter & Company to consult you before disposing of any plates of this description, either in the way of sale, or supplying them to the railroads for experimental or other use?

A. It was not necessary, but it never was done. There was no plates ever put out on the market without the special design of plate having received my approval.

X Q. 131. But this Goldie claw top depression plate had been already designed by you and manufactured, or made by Dilworth, Porter & Company, had it not?

A. The plate as shown there, the drawings were got up previous to the manufacture of the plate, and there was simply a few of them, to the best of my recollection, made to see what they looked like. I never went on the road to introduce a plate of that kind, and I was the only one that was on the road in connection with tie-plates at that time.

X Q. 132. But the claw plate, with the depression top, had been designed by you and was to some extent made by Dilworth, Porter in accordance with Figs. 2 and 3 of the drawings in the Letters-Patent, 540,356?

Mr. Brown: The question is objected to as improper because it has already been answered several times by this witness.

1269 A. The plate was made by Dilworth, Porter & Company simply as an experiment, and abandoned at that. We never placed any of them on the market, or attempted to place them.

X Q. 133. Please read the question again to the witness. (Question read.) I would like to have the question answered yes or no.

Same objection.

A. It was manufactured by them only to the extent that I have indicated in my previous answers.

X Q. 134. What I have asked and have been trying to get an answer to is this: Whether the claw plate with the depression top had been designed by you and to some extent manufactured by Dilworth, Porter & Company, in accordance with Figs. 2 and 3 of the drawings shown in connection with Letters-Patent 540,356?

and I would like to have you answer the question fairly and squarely by saying yes or no.

Same objection.

A. The plate was designed by me and manufactured by Dilworth, Porter & Company, to the extent that I have formerly indicated.

X Q. 135. Please state whether the manufacture of this claw depression top, to the extent that it was made by Dilworth, Porter & Company, was in accordance with Figs. 2 and 3 of said Letters-Patent?

A. To the best of my knowledge, it was.

X Q. 136. To what extent and in what manner and in what periodicals, if any, did Dilworth, Porter & Company advertise the Goldie top cavity rib tie-plate?

A. To the best of my knowledge and belief, it was advertised simply by circulars. I do not remember any illustration of it being placed in any of the technical journals.

1270 X Q. 137. Did these circulars contain drawings or illustrations showing the device?

A. They did, and I think I wrote the circular.

X Q. 138. Did the illustrations in the circulars show the top depression cavity or groove, the top shoulder and the bottom ribs in substantially the same way as in the drawings atached to Letters-Patent 485,030, or any of them?

A. The circulars showed the plate substantially as it is in the patent drawings.

X Q. 139. I suppose you have not a specimen of these circulars?

A. I haven't.

X Q. 140. Were these circulars printed?

A. They were.

X Q. 141. To what extent and in what manner, and to what concerns were these circulars distributed?

A. The circulars were distributed by the city office through the mails, I presume. I carried some of them with me when I was traveling and distributed them to the roads that I came in contact with.

X Q. 142. Were these circulars containing these drawings of this top cavity or groove Goldie rib tie-plate, mailed generally to the trade and railroads throughout the United States?

A. I think they were.

X Q. 143. And this was done about the year 1892?

A. I think so.

X Q. 144. Was this Goldie top cavity tie-plate placed by Dilworth Company in its catalogue or price-list?

A. To the best of my knowledge at that time Dilworth, Porter & Company did not publish a catalogue. They advertised their goods simply by circulars and in the Railway Gazette and Railway Age, but I do not recollect of any illustration being made in either publication of the rib plate with the depression on the top.

1271 X Q. 145. But the circulars that were prepared, printed and distributed, clearly showed the depression, cavity or groove clear across the plate lengthwise, I understand?

A. They did.

X Q. 146. To what extent were the Goldie concave top rib tie-plates supplied to the Pennsylvania Railroad Company, and about when?

A. I cannot say, as I kept no records of the sales, that being attended to exclusively by the sales department.

X Q. 147. But some time about 1892, plates of this description; that is, the Goldie top cavity ribbed plates, were furnished to the Pennsylvania Railroad Company or System?

A. I am not sure whether there was any plates with the depression on top furnished that Company. My recollection is that it was all claw plates that was furnished the Pennsylvania Company. They may have got a few rib plates, but I am not positive.

X Q. 148. You would not wish to testify either way as to whether the Pennsylvania Railroad got the Goldie top cavity rib plates; that is, positively?

A. Not positively.

X Q. 149. Were any plates substantially of the design shown on "Complainant's Exhibit No. 138, Miller sketch, numbered 426,530," made; I do not mean whether or not they were sold; but whether any plates of that kind were manufactured at all?

A. None whatever.

X Q. 150. Not even a sample or model plate?

A. None. A wooden model was made of it, but not any metal.

X Q. 151. How many plates like the design numbered 457,584 on this drawing, were made?

A. I cannot say. You will have to refer to the books of Dilworth, Porter & Company, as I kept no record.

1272 X Q. 152. But I understand that plates of this last description, were made and sold by Dilworth, Porter & Company?

A. Yes, a good many.

X Q. 153. And the beginning of this manufacture of this last kind of plate was about the middle of 1891?

A. No, I think not. There was no plates of any kind made in 1891. The patent was issued then; none made until the spring of 1892. My contract with Dilworth, Porter & Company, was dated the 27th of January, 1892, and it was several months after that before any plates were manufactured of any kind.

X Q. 154. But beginning with the spring of 1892, plates like 457,584 in this sketch, were manufactured?

A. Yes.

X Q. 155. And from that time, for some years, manufactured and marketed by Dilworth, Porter & Company?

A. They were, of special sizes. When we got the rolls we abandoned that plate, but we made quite a quantity of them for switch plates and joint plates.

X Q. 156. What was the purpose or function of these projections from the lower side or surface of the sketch drawing No. 426,530?

A. I think the best description of that would be found in the Letters-Patent itself, as those Letters-Patent clearly illustrate the

theory upon which I constructed the plate. There was never any of them made or sold.

X Q. 157. Well, for the purpose of edification of myself and the court, will you please tell briefly the purpose and functions of these lower projections?

A. The function of these projections were, each of those had a rib that went clear around the plate, and the function I intended was that it would give a firmer bearing on the tie. You cannot properly illustrate that without a plan of the plate which would show and clearly illustrate it in a way which cannot be done by a sec-
1273 tion right through the plate. The proper way is to refer to the drawings of the patent, to get a clear idea of what it is.

X Q. 158. But you intended these ribs should be seated in the tie?

A. The intention was that the weight of the equipment would press them into the ties, and thereby give a more stable bearing, and also furnish considerable resistance against the lateral movement of the rails when in use.

Mr. Brown: Cross-questions 156, 157 and 158 and the answers thereto, relating to a patent not in issue in this suit, are objected to as irrelevant, immaterial and incompetent, and not proper cross-examination.

X Q. 159. And the function and effect of the projections on the upper surface were to act as shoulders to retain the rail, in position, I take it?

Same objection.

A. That is correct.

X Q. 160. And there projecting shoulders were parallel to the rail and the rail flanges abutted against them on each side?

A. That is correct also.

X Q. 161. And in design 457,584 in this sketch, the projection on the upper surface made by taking a sort of a loop in the plate, acted as a shoulder against which the rail flange impinged, did it not?

Same objection.

A. It did.

X Q. 162. And I take it that this projection on the upper surface was parallel to the rail and ran clear across the length of the
1274 plate, both in the design and in the plate as manufactured?

Same objection.

A. It did.

X Q. 163. And in No. 457,584, the projections at the sides went downward and were intended to engage in the tie?

A. They were.

X Q. 164. Were these down projections claws at each corner, or did they extend the length of the plate at each side?

A. They were at each corner and about an inch wide.

X Q. 165. And the breadth of the claw engaging in the tie was transverse to the tie length and parallel to the rail?

A. It was.

X Q. 166. Referring to No. 457,585, in this sketch, were any plates of that design manufactured?

A. Not one.

X Q. 167. Was any model made?

A. A small brass model.

X Q. 168. And that model was in conformity with the drawings exhibited in the Letters-Patent?

A. Yes.

X Q. 169. It was intended that the downward projection should engage in the tie, I take it.

A. It was.

X Q. 170. Was this downward projection a claw at each corner on one side, or did it extend the entire length of the plate at the side?

A. At each corner on one side only.

X Q. 171. And the projection on the top, towards the center of the plate, extended clear across the plate, parallel to the rail and was intended to act as a shoulder against which the rail flange could rest?

1275 A. It was so intended.

X Q. 172. Were any tie-plates of the design shown on this drawing as No. 540,356, manufactured?

A. Yes, quite a large quantity.

X Q. 173. The downward projections were claws at each corner?

A. Each corner, or adjacent thereto.

X Q. 174. And the projection on the upper surface went the entire length of the plate parallel to the rail and served as a shoulder against which the rail flange rested?

A. It did.

Cross-examination closed.

Redirect-examination by Mr. Brown:

R. D. Q. 175. State whether or not Dilworth, Porter & Company, kept a record of all tie-plates manufactured according to your designs and patents, and if so, whether or not you inspected those records, and checked them up quarterly and acknowledged their accuracy at the time?

Objected to as not rebuttal or proper redirect and incompetent.

A. They did, in my estimation keep absolutely correct records of all sales made of tie-plates manufactured by them.

R. D. Q. 176. Please look at the book which I now show you, and state whose signatures you find on pages 1, 2, 3, 4, 7, 9, 11, 13, 16 and 18.

Objected to as laying the foundation for evidence that is not proper rebuttal or proper redirect examination, and as incompetent.

A. It is my signature, attached to verify the correctness of the statements contained therein.

Mr. Reed: Answer objected to on same grounds and motion to strike out.

1276 R. D. Q. 177. And state whether or not you signed these pages on the respective dates adjacent to each signature?

Same objections.

A. I certainly did.

Mr. Brown: The book shown to the witness is marked at this time for identification only, as "Complainant's Exhibit No. 145."

R. D. Q. 178. In your direct examination, you stated that there were a few claw plates manufactured having a slight depression in the upper surface, and that these were made only as samples, and in your cross-examination you have stated in answer to X Q. 129, you said there were "simply a few of them struck off," and in answer to X Q. 117, you said, "I am satisfied there were some plates made with that depression," but in answer to X Q. 118, you answered, "We made a large number of them at that time by drop forging process." Please state what is the fact as to the actual manufacture of the Goldie Claw plate having a slight depression in the upper surface?

A. There was a very few of them made. When I answered that we made a large quantity of plates by the drop forging process, I referred to the claw plate with the flat surface both on top and below.

R. D. Q. 179. During the cross-examination, defendant's counsel has referred repeatedly to the depression in the top surface of the Goldie Rib plate, as a cavity or a groove. In answering his questions, containing those expressions, did you understand him to mean a depression or cavity or groove cut out of the top surface of the plate?

A. I certainly did not. My idea of it was that it was a very slight depression for the purpose at that time for giving the rail a more secure seat on the tie, for the reason that at that time there
1277 was rails manufactured that were slightly convex on the under side of their base, and not in any sense that the metal was cut out of the plate at that portion of it.

R. D. Q. 160. State whether or not the body of the plate was made thinner by reason of this depression or concavity or groove, or by whatever name it may have been designated.

A. It certainly was not. The plate was of uniform thickness throughout its body, modified shortly after we commenced its manufacture by tapering it slightly on the portion of the plate outside of the base of the rail.

Redirect examination closed.

Re-cross examination by Mr. Reed:

R. X Q. 181. At the time that the Goldie top cavity rib plate was designed and manufactured, some of the rails used by railroads were flat on the bottom, were they not?

A. Some were practically flat; not entirely so.

R. X Q. 182. You mean that some rails were fairly flat on the bottom, but all rails were not flat on the bottom, do you?

A. Well, any of them, put a straight edge on them, you would

find that the middle was slightly elevated above the edges; any of them at that time.

R. X Q. 183. But the convexity of the rails at that time was not as great as the depth of this cavity, was it, as originally employed?

A. Certainly not.

R. X Q. 184. Then I understand that at that time no rails were manufactured, in which the convexity on the bottom was as great as the concavity in the top of this Goldie top depression plate?

A. They were not, but whether the rail was absolutely
1278 flat or convex, it wouldn't make any difference in the use of it. It would give a firmer seat of the rail on a plate under any circumstances.

R. X Q. 185. Were any of the Goldie top cavity rib plates made by drop forging at any time?

A. Not any.

Mr. Reed: The book shows witness, in which his signatures are identified, not having been introduced in evidence, counsel reserves the right to cross-examine the witness, relative to the entries therein, if said book is at any time offered in evidence, and with this reservation, the re-cross examination is closed.

Examination closed.

WILLIAM GOLDIE.

And thereupon, WALTER F. SCHLEITER, a witness produced upon behalf of complainant, having been first duly cautioned and sworn, testified upon oath as follows in answer to interrogatories by Mr. Brown:

Direct examination:

Q. 1. Please state your name, age, residence and occupation?

A. Walter F. Schleiter; age, 37; residence, Pittsburgh; occupation, Secretary Dilworth, Porter & Company.

Q. 2. How long have you been connected with Dilworth, Porter & Company?

A. Twenty-one years.

Q. 3. What is the business of that concern?

A. Manufacture of railroad spikes and railroad tie-plates.

Q. 4. How long has that company been manufacturing and selling tie-plates?

1279 A. Started to manufacture tie-plates in 1892.

Q. 5. And what tie-plate did the company first manufacture and sell?

A. The Goldie Rib tie-plate.

Q. 6. Was that a patented tie-plate, and if so, who was the inventor and patentee?

A. It was a patented tie-plate, invented and patented by William Goldie.

Q. 7. State whether or not the manufacture and sale of tie-plates of Mr. Goldie's invention by Dilworth, Porter & Company was carried on under a royalty agreement, and if so, whether or not the company

kept a true record of the manufacture and sales of the Goldie tie-plate?

A. The tie-plates were manufactured under a royalty agreement, and a true record of the manufacture and sale of the Goldie tie-plate was kept by the company.

Q. 8. Describe for the information of the court, in what manner this record was kept and how the accounting to Mr. Goldie was made and how often?

A. The records were kept in a sales book and at the end of each quarter the sales were recapitulated, a statement of all the costs for the manufacture shown and settled by the figures shown in this book, and were subscribed to by Mr. Goldie at his convenience, quarterly settlements being made.

Q. 9. And by the use of the word "quarterly," I presume you mean quarter yearly, or a period covering three months?

A. Yes, sir.

Q. 10. Has your company kept original records of the various invoices that accompanied the sale of each order for tie-plates?

A. Yes, sir.

Q. 11. During your employment with Dilworth, Porter
1280 & Company, what opportunity have you had to become familiar with the operations of the company with respect to the manufacture, sale and keeping the records of manufacture and sale of the Goldie tie-plates?

A. That of receiving and entering up of all orders, billing all sales and entering up all sales, and being generally conversant with the mill practice.

Q. 1-. Please look at the records of your company and state the date and the name of the purchaser and the amount or quantity of tie-plates that were first sold, of the Goldie patent, producing, if you please, the first invoice, or your office copy thereof.

A. I refer to invoice book covering all transactions of our company from October 1, 1892, to December 31, 1892. The first sale of Goldie tie-plates occurred on November 5, 1892, to the Portman & Rumford Falls Railroad; consignee, C. S. Osgood, Rumford Falls, Vt., consisting of a thousand tie-plates.

Q. 13. Please read to the notary the complete invoice of that transaction, as you have it in your book there.

A.

{440	Goldie Tie Plates	4 x #1}		$32.12
}440	"	4 x #2{2310 lbs. 7.3		32.12
60	"	5 x #3}		5.16
60	"	5 x #3{390 lbs. 8-3/5		5.16
				$74.56

Q. 14. Please describe the character or section of the tie-plate manufactured and sold and referred to by this invoice.

A. The Goldie tie-plate as above referred to, covers a plate with a shoulder on top to engage the rail and two parallel ribs underneath to engage the tie and prevent lateral movement. The plate was slightly beveled at each end, or tapered.

Q. 15. Please look at "Complainant's Exhibit No. 144," and "Defendant's Exhibits B and C," and state how these tie-
1281 plates correspond with or differ from the tie-plate you have just been speaking about; that is, the first Goldie Rib tie-plate.

A. These plates correspond to the first Goldie Tie-plate that we produced.

Q. 16. Please turn now to your invoice book and give me the date and the name of the purchaser to whom Dilworth, Porter & Company made its last sale of Goldie Rib tie-plates.

A. Our records show that the last sale of Goldie Rib tie-plates was made September 23, 1895, to the Portland & Rumford Falls Railway, consisting of 4,000 plates, consigned to Mechanics Falls, Me.

Q. 17. And in which record book is this invoice record contained?

A. This is found in the Tie-Plate Invoice Book starting with May 1, 1895, and covering a period to July 17, 1897.

Q. 18. And on what page of this book is this invoice record of September 23, 1895?

A. Page 93.

Q. 19. And on what page of the record book first referred to, is found the record of the first sale?

A. Invoice Book No. 9, page 330.

Q. 20. During this period from November, 1892, to September 23, 1895, what do your records show to be the total number of Goldie Rib tie-plates manufactured and sold, and in giving your answer, please give it by years in tons.

A. We sold in 1892, approximately 41 tons.
1893 " 157 "
1894 " 114 "
1895 " 141 "

Q. 21. Please give us a list of the sales of Goldie Rib
1282 tie-plates during this same three-year period, stating the sales in pounds and by quarters.

A. Third Quarter, 1892 82,595 pounds.
First " 1893 8,985 "
Second " 1893 188,705 "
Third " 1893 62,880 "
Fourth " 1893 54,120 "
First Quarter, 1894 23,440 "
Second " 1894 118,145 "
Third " 1894 60,865 "
Fourth " 1894 26,604 "
First " 1895 10,702 "
Second " 1895 124,690 "
Third " 1895 147,125 "

Making a total of 908,856 pounds.

Q. 22. State approximately about how many tie-plates in all this would cover.

A. I should say something around 200,000.

Q. 23. Were the tie-plates known as the Goldie Rib tie-plates, always manufactured during this three-year period of the same section or configuration as those first manufactured? In other words, were there any changes made in the section or configuration, and if so, what?

A. There were two changes in the configuration; rather two types; one with the concave top and convex bottom and the other with the flat top and bottom, the ribs, of course, appearing on both sections.

Q. 24. Which of these two styles or sections of Goldie Rib tie-plate was made first?

A. I am of the opinion that the concave top.

Q. 25. Do your records show anything to indicate which of the sales made during the three-year period referred to, were the Goldie Rib plate of the concave-convex design, and which of the flat top design?

1283 A. No, sir.

Q. 26. What is your knowledge of the fact as to the proportion of the total number, approximately 200,000 Goldie Rib plates, being of the concave-convex design or type?

A. I should say there were not over thirty to fifty thousand plates of this character shipped by us.

Q. 27. And the balance of the 200,000 were of the flat top?

A. I believe so.

Q. 28. Please turn to your records and state the date when the first sale of Goldie Rib tie-plates was made to the Atchison, Topeka & Santa Fe Road, and the number of plates and give any other information that the invoice shows.

A. The first sale to the Atchison, Topeka & Santa Fe Railroad, was made December 9, 1892, covered by Invoice in Invoice Book No. 9, page 552, consigned to the general store-keeper, Topeka, Kansas, and consisted of 1,000 Goldie tie-plates 6 inches wide, at 10 cents each, amount $100; freight allowed, $7.67, making net amount of invoice $92.33.

Q. 29. And do you know which of the two types of Goldie Rib plates were sold at this time to the Santa Fe System?

A. I don't.

Q. 30. During this period of three years, including the third quarter of 1895, did your company sell any other lot of Goldie Rib tie-plates of either of the two styles to the same road?

A. No, sir.

Q. 31. During this same period, did your company sell tie-plates of any other pattern or design to the Santa Fe Road, and if so on what dates, and what place?

A. We sold the Atchison, Topeka & Santa Fe Road the
1284 Goldie Claw type of plate subsequent to this first sale of the Goldie Rib type. This occurred March 29, 1895, consisting of 1,000 Goldie claw plates, consigned to in care of C. P. McLellan, Receiver, Leavenworth, Kans. Another sale occurred on May 2, 1895, consisting of 756 Goldie claw plates, consigned to

Thomas Truelove, Lowemont, Kas. Another sale on May 25, 1896, consisting of 1,000 Goldie claw plates, shipped in care of J. C. Rockhold, Argentine, Kas. Another one on May 25, 1896, consisting of 1,000 Goldie claw plates, in care of J. C. Rockhold, Kansas City, Mo.

Q. 32. State whether or not Dilworth, Porter & Company made a second sale to or received a second order from the Santa Fe Road for Goldie Rib tie-plates, subsequent to the first order of December 9, 1892?

A. No sir; we did not.

Q. 33. State what steps were taken by Dilworth, Porter & Company, to introduce upon the market and to have them used in track, the Goldie Rib tie-plates of either or both designs to which you have referred.

A. We used the inventor, Mr. Goldie, to go among the trade explaining the merits of his device in person, and to act as saleman; also by means of a circular that was sent out from the office by mail. The railway magazines may have been used, but I do not recall that.

Q. 34. Was there an effort made to bring the Goldie Rib tie-plates generally to the attention of the various railroads?

A. Yes, sir; by the means that I have spoken of.

Q. 35. Were there any instances where these Goldie Rib tie-plates were placed with the road as trial orders or sample orders, without cost to the road?

A. Often in our endeavors to make sales, we would offer plates on certain services to be performed. Failing in that they would be at no cost to the railroad company.

1285 Q. 36. Please refer to your records and give us a list of the railroads to whom these 200,000 Goldie Rib plates were consigned during the three-year period referred to.

A. Our records show that the Goldie Rib tie-plates were sold to and paid for by the following roads:

Portland & Rumford Falls R. R.
Old Colony R. R.
Atchison, Topeka & Santa Fe R. R.
Central of Vermont.
Fall Brook R. R.
Louisville & Nashville R. R.
Kansas City, St. Joe & Council Bluffs.
Chicago, Burlington & Quincy.
Peoria & Pekin Union.
Burlington & Missouri River R. R. in Nebraska.
Boston & Maine R. R.
Chicago, Milwaukee & St. Paul R. R.
Moshassuck Valley R. R.
Toledo & Ohio Central R. R.
New York, New Haven & Hartford R. R.
Houston & Texas Central.
Cincinnati, Hamilton & Dayton R. R.
Hannibal & St. Joseph R. R.

Chicago & Northwestern Ry.
Allegheny Valley Ry.
St. Louis, Merchants Bridge Terminal Ry.
Chicago, Rock Island & Pacific.
Long Island R. R.
Union Pacific R. R.
Pittsburgh, Shenango & Lake Erie R. R.
Hunter's Run & Slate Belt R. R.
Pennsylvania R. R.
Wilkes-Barre & Eastern R. R.
Cincinnati & Westwood R. R.
Chesapeake & Ohio R. R.
Cleveland, Loraine & Wheeling Ry.
Missouri Pacific Ry.
Flint & Pierre Marquette R. R.
Kentucky & Indiana Bridge & R. R. Co.
St. Paul & Duluth R. R.
Central of New Jersey R. R.
Union Pacific, Denver & Gulf.
1286 Boston, Revere Beach & Lynn R. R.
Butte, Anaconda & Pacific.
Kansas City, Ft. Scott & Memphis.
Elgin, Joliet & Eastern R. R.
Missouri, Kansas & Texas Ry.
Cincinnati, New Orleans & Texas Pacific Ry.
International & Great Northern Ry.
Baltimore & Ohio R. R.
Pittsburgh, Cincinnati, Chicago & St. Louis Ry.
Leavenworth, Topeka & Southwestern Ry.
Choctaw, Oklahoma & Gulf Ry.

Q. 37. Please look at the circular which I now hand to you and state what it is.

A. This circular shows the Goldie Rib tie-plate with flat top and bottom, shoulder on top and two ribs underneath. It is a type of plate generally described as the Goldie Rib tie-plate. It also shows certain printed matter, and is a circular issued by our company.

Q. 38. Is this a copy or one of the circulars referred to in the previous answer as the circulars issued by your Company in exploiting the Goldie Rib tie-plate?

A. Yes, sir.

Q. 39. And was there any other circular issued that you know o on this subject?

A. I do not recall any now.

Complainant's counsel offers in evidence as an exhibit, the circular identified by the witness, and the same is marked, "Complainant's Exhibit No. 146, D., P. & Co. Circular Goldie Rib Tie-Plat B. D. Gamble, Commissioner, Sept. 20, 1910."

(Here follows fac-simile of circular marked pages 1287 and 1288

U.S. CIR. COURT, NORTH'N DIST. ILLINOIS
THE RAILROAD SUPPLY CO. vs. THE HART STEEL CO. and GUILFORD S. WOOD } IN CHANCERY No. 29294

U.S. CIRCUIT COURT NORTHERN DIST. OF OHIO
THE RAILROAD SUPPLY CO. vs. THE ELYRIA IRON & STEEL CO. } IN EQUITY No. 7668.
COMPLAINANTS EXHIBIT No. 146
D. P. & Co.'s CIRCULAR GOLDIE RIB TIE PLATE
SEPT. 20TH 1910
COMMISSIONER.

Dilworth, Porter & Co., Limited,

Pittsburg, Pa., October 1st, 1892.

DEAR SIR:—We beg leave to inform you that we have now commenced the manufacture of the

GOLDIE TIE PLATE

on an extensive scale, and will, from this date, be in a position to fill all orders promptly.

A Tie Plate is now almost universally conceded by PRACTICAL ENGINEERS to be necessary for the preservation of a correct gauge and for the protection of the ties from the cutting action of the rails, resulting from the severe service to which they are now subjected, and in offering the

GOLDIE TIE PLATE

we feel assured that we are presenting for your approval a device worthy of your consideration and fulfilling in a greater degree, than any which have preceded it, the requirements necessary for a practical and successful plate.

The plates are rolled in our own mill of the best soft steel, and under the most careful supervision, thus ensuring uniformity both of material and manufacture; and also enabling us to furnish it at the lowest possible price consistent with

GOOD MATERIAL AND CAREFUL MANUFACTURE.

The Plate as now rolled has a rib on its upper side to hold the flange of the rail, thus preventing any SHEARING OFF OF THE SPIKE, and also relieving the neck from any wearing action.

It has on its under side two ribs with sharp edges, these enter the tie at right angles to its grain, thus giving a secure grip on the tie and resisting, with the power of MANY SPIKES, ANY TENDENCY TO SPREAD.

It is very slightly concave on its upper side under the center of the base of the rail and in an equal degree convex on the opposite side, and we have by exhaustive experiment and use demonstrated that it has LESS TENDENCY TO BUCKLE THAN ANY OTHER TIE PLATE NOW ON THE MARKET.

We still manufacture the GOLDIE PERFECT RAIL ROAD SPIKE IN SOFT STEEL, IN CONSTANTLY INCREASING QUANTITIES, and we can confidently recommend the

Goldie Perfect R. R. Spike and Goldie Tie Plate

as being the most economical and perfect combination for the purpose before specified which is now upon the market.

Hoping that you will favor us with an order, we are,

Yours Truly,

Dilworth, Porter & Co., Limited.

1289 Q. 40. Please look at the framed photograph I show you and state what that is?

A. It is a photograph of an exhibit of tie-plates and spikes. The tie-plate shows the first Goldie tie-plate.

Q. 41. When and by whom was this photograph prepared?

A. It was prepared by me for the photographer in the spring of 1893.

Q. 42. And where has this framed photograph been; that is, in whose possession?

A. Hanging in the office of Dilworth, Porter & Co.

Q. 43. Please look at the unmounted photograh that I now hand you, and state what that is.

A. The unmounted photograph is a copy of the above described original.

Mr. Brown: The framed photograph is marked for identification merely, and the unmounted photograph is introduced in evidence as an exhibit and marked "Complainant's Exhibit No. 147, D. P. & Co. Advertising Photograph Goldie Rib tie-plate, B. D. Gamble, Commissioner, Sept. 20, 1910."

Q. 44. State whether or not the photograph, "Exhibit No. 147," shows one or both styles of the Goldie Rib tie-plate.

A. It shows both styles. The one under the rail shows the concave surface, while the other shows the flat surface. This latter is very clearly indicated by the stencil used in stamping our name on same, which extends nearly over the whole surface of the plate.

1290 Q. 45. Please look at the book which I now show you, state what it is and whose signature appears on the several pages, 1 to 18 inclusive.

A. The book represents the sales in detail and settlements in connection therewith, and the signature of William Goldie.

Q. 46. Please read, for example, one of the receipts or acknowledgements in full say that on page 18.

A. The receipt on page 18 reads:

"I have examined the above account and find same correct, and do hereby acknowledge receipt of $2,655.80 Two Thousand Six Hundred Fifty-five and 80/100 Dollars in full settlement of amount due me October 1, 1895, according to contract. Pittsburgh, Pa., December 6, 1895. (Signed) Wm. Goldie."

Q. 47. State whether or not the other receipts signed by William Goldie, on pages 1 to 17, inclusive, are the same as the one you have just read from page 17, excepting as to the amount and date?

A. They are the same.

Q. 48. Have you any objection to the Goldie royalty settlement book just referred to, the two invoice books the Goldie tie-plate order book and this framed photograph being put in evidence in this case.

A. There is no objection to any except the Royalty book, which is of the most confidential nature, and while we have no objection to its examination, we would not want this book to go out of our possession.

Q. 49. You would not object to the use of this royalty book b counsel in court at the day of the trial, would you?

A. I suppose not; no.

Mr. Brown: The several books referred to are marked for identi cation as follows:

The Goldie Royalty Book, as "Complainant's Exhibit No. 14 Goldie Royalty Book;"

1291 The Sales Book or Order Book, as "Complainant's Exhib No. 148, Order Book Goldie Tie-Plate No. 1;"

The Invoice Books, as "Complainant's Exhibits No. 149 and N 150," respectively, "D. P. & Co. Invoice Books;"

The framed photograph, as "Complainant's Exhibit No. 151 I P. & Co. advertising photograph Goldie Rib tie-plate," togethe with the name of the Commissioner and date; it being stipulated an agreed between counsel that these original documents may be r tained in the custody of Dilworth, Porter & Company, subject to i spection at all reasonable times, and upon proper notice by defen ant's counsel, and the making of memoranda relating to the matte inquired of from such books, and the same to be produced in cou upon request at the trial of this cause.

Mr. Reed: Counsel for defendant reserving all objections to th materiality, relevancy and competency of said books and documen and each part thereof, and the competency of the same as rebutt evidence.

Q. 50. Please state the reason or reasons why Dilworth, Porter Company abandoned the manufacture and sale of the Goldie ri tie-plate?

(Objected to as irrelevant and immaterial and not proper rebuttal as hearsay evidence and as not based upon any proper knowledg shown.)

A. The business did not increase sufficiently for efforts put forth no road adopted it as standard, and on Mr. Goldie's recommenda tion it was discontinued.

Q. 51. During the three-year period when the Goldie rib plate were being manufactured and sold, did your company manufactur any other kind or style of tie-plate, and if so, what?

1292 A. We started the manufacture of the Goldie claw plat

Q. 52. And are you manufacturing the Goldie claw plat today?

A. Yes, sir.

Q. 53. State in a general way the relative volume of business i the first two or three years of its manufacture between the Goldie r plate and the Goldie claw plate.

Objected to as immaterial, irrelevant and not rebuttal.

A. Without the record before me, I could not give you this.

Q. 54. Well, the manufacture and sale of the Goldie Rib plat was succeeded by the manufacture and sale of the Goldie claw plat as I understand it?

Objected to as leading, irrelevant, immaterial, not rebuttal, and not shown to be within the knowledge of the witness.

A. Yes, sir.

Q. 55. State whether or not the Goldie claw plates were ever manufactured or sold or used in track where the claw plate had a concavo-convex cross-section similar to that of the concavo-convex Goldie Rib plate?

A. No Goldie claw plates with a top of that character were ever sold.

Q. 57. Was there any depression in the top of the Goldie claw plates at all?

A. None whatever.

Q. 58. Referring to the concavo-convex Goldie Rib tie-plate, about how deep in its deepest part was the depression in the top surface?

Objected to on the ground that the witness has not shown any knowledge.

A. About 1/16 of an inch.

1293 Q. 59. And how was this depression formed? By taking out any metal from the top surface?

Objected to as leading, and no knowledge shown.

A. No, sir, but by depressing the entire plate.

Q. 60. In what year, if at all, did Dilworth, Porter & Company manufacture tie-plates having a groove in the top surface; that is, a groove formed by cutting out the metal from the top surface?

A. This did not take place until a number of years afterwards; about 1899, when we first manufactured the Glendon flange plate. This was designed with certain grooves or depressions to effect a saving of metal. This is the first time that this term became a trade parlance with us.

Q. 61. And why did you make a plate with a groove at that time to lighten the plate or save metal?

Objected to as immaterial and irrelevant.

A. This type of flange plate was receiving very great consideration and with a view of entering this field, it became necessary for us to design a plate of similar character. The first flange plate we considered was a flat top but was found to be too heavy to compete with the types then on the market, and we conceived the idea of forming this plate with grooves or depressions to effect a saving in metal.

Q. 62. In your answer to Q. 11, in which you were asked what opportunity you had to become familiar with the operations of Dilworth, Porter & Co., with respect to the manufacture of the Goldie tie-plate, you stated among other things that you were generally conversant with the mill practice. Please state a little more fully what opportunity you have had to know the actual construction and process of manufacturing the Goldie Rib tie-plates during the three-

year period that they were being manufactured by Dilworth, Porter & Company.

1294 A. I saw the plans as they were made up, the turning of the rolls, the work that was done in the machine in turning the rolls; I saw the rolls tried and figured the sizes of it and ordered the billets that we needed for these plates.

Q. 63. And did you see the plates themselves manufactured from time to time?

A. Yes, sir.

Q. 64. Mr. Schleiter, in your experience in the manufacture and sale of tie-plates, and in observing them in use in track, do you know of any instances where tie-plates of any kind have been used in track under rail joints of what might be called patented joints, such, for example, as the Weber joint, or other form of joint, having a plate or member extending under the base of the rail?

Objected to as irrelevant and immaterial and not proper rebuttal, and as no qualification shown on the part of the witness.

A. I have never seen this plate in use under any patented joints that I recall, but we did manufacture Goldie claw plates for such purpose, and whether they were used in connection with a patented joint, or the ordinary angle bar, I can not say, but we did furnish them.

Q. 65. Did Dilworth, Porter & Company sell any tie-plates of any of Goldie patterns or types, to the Pittsburgh & Lake Erie Railroad?

A. Yes, sir, we sold one type to the Pittsburgh & Lake Erie Road, known as the Goldie claw tie-plate.

Q. 66. I believe you have stated that the Goldie claw plates sold by your company had flat top surfaces only?

A. Yes, sir.

Direct examination closed.

1295 Cross-examination by Mr. Reed:

X Q. 67. This invoice copy book marked No. 9 and identified as "Exhibit No. 149," contains invoices for tie-plates and also invoices for other devices manufactured and sold by Dilworth, Porter & Company, does it not?

A. Yes, sir, and such other materials as we sold.

X Q. 68. But I understand that it contains correct copies of the invoices of all tie-plates sold by Dilworth, Porter & Company from the date of the first sale, Nov. 5, 1892, to the Portland & Rumford Falls Railroad, down to Dec. 31, 1892. Is that correct?

A. It is correct, yes, sir.

X Q. 69. Invoice impression book marked on the outside tie-plates, and identified as "Exhibit No. 150," purports to begin May 1, 1895, and close July 17, 1897. I understand that this book contains a complete record of the invoices of tie-plates sold between those dates, May 1, 1895, and July 17, 1897. Is that correct?

A. Yes, sir.

X Q. 70. And this last book is confined to the sale of the tie-plates exclusively, is it not?

A. Yes, sir.

X Q. 71. Where are the copies or impressions of the invoices of tie-plates between Dec. 31, 1892, and May 1, 1895?

A. At our office.

X Q. 72. Do you recall how many such books there are, and whether the tie-plate invoice- in question were kept separate for that period, or whether they are included in the general invoice impression book?

A. It is my belief that they are included in the general invoice impression book.

X Q. 73. You would have no objection to these books
1296 being examined and memoranda as to sales of tie-plates taken therefrom by counsel and the books themselves produced at the hearing if desired?

A. Providing it has the approval of our Board of Managers. I would not wish to give my consent.

X Q. 74. You would have no objection to the same use of these impression books that have not been produced that has been arranged for relative to the two that have been produced and identified, would you?

A. No, sir, but we do not wish our records jeopardized in any way.

X Q. 75. We have endeavored to make a fair arrangement in reference to the two impression books that have been produced and one that will not take them from the custody of Dilworth, Porter & Company. What I am trying to get at is whether you are willing that the same arrangement as to inspection and taking of memoranda by counsel in this case can be made as to the invoice impression books that have not been produced.

A. Inspection at our office? That would be satisfactory.

X Q. 76. In giving this list of railroads to which Goldie Rib plates were sold, did you take it from the invoice impression book?

A. Took it from the sale book.

X Q. 77. And did you give it, the list, in the sequence of dates?

A. Practically so.

X Q. 78. And these sales to these railroads that you gave a list were between Nov. 5, 1892, and Sept. 23, 1895, I take it?

A. Yes, sir.

X Q. 79. But there is nothing either in the invoice impression book, or the sales book, or any of the records of Dilworth, Porter & Company, which shows in these sales to these railroads of the
1297 Goldie Rib plate, what or what quantity of these plates had the concave top surface or were flat?

A. No, sir, it is impossible to tell, from the record.

X Q. 80. But during this period, I understand that for a time the Goldie Rib plate was at first made only with the concave top, and then afterwards, it was made both with the concave top and with the flat top. Is that correct?

A. Your understanding of that is not correct.

X Q. 81. Please state the facts then.

A. I believe at first we started to make them with the slightly

825

concave top, and subsequently made them with the flat top, it having been demonstrated that the concave top was not necessary.

X Q. 82. At what time in the manufacture of the Goldie Rib plates did the Dilworth, Porter Company begin the manufacture of the flat top?

A. I can't answer that. As I said before, I don't know just when we did that.

X Q. 83. Is it not a fact that the manufacture of the concave top Goldie Rib plate was continued after the manufacture of the flat top Goldie rib plate was commenced?

A. I do not think so.

X Q. 84. Would the recollection of Mr. Goldie on this subject of whether the manufacture of the concave top rib plates was abandoned at the time the flat top plates were put on the market, be apt to be more accurate than yours?

A. I would be willing to defer to Mr. Goldie, but I don't think it would be more accurate.

X Q. 85. Did the orders for these Goldie Rib plates usually come from the railroads in writing?

A. Yes, sir.

1298 X Q. 86. Do you recall or have you investigated to see whether any of the orders for Goldie Rib plates from the railroads specified whether or not the tops were to be concave or flat?

A. I do not recall having seen any such notations on any orders. It was a minor point with us, and only taken into serious consideration for a very short period.

X Q. 87. Yet you thought it advisable to refer to this concavity in the circular, did you not?

A. Quite true, and which we tried to forget so soon as every railroad man we came in contact with "poohpoohed" it.

X Q. 88. Did the Atchison, Topeka & Santa Fe Railroad men poohpooh this feature of the plate?

A. I have no knowledge of this. I question whether they observed it at that time.

X Q. 89. In this circular there is a statement: "It has on its under side two ribs with sharp edges, these enter the tie at right angles to its grain, thus giving a secure grip on the tie, and resisting with the power of many spikes any tendency to spread.

It is very slightly concave on its upper surface under the center of the base of the rail, and in an equal degree convex on the opposite side, and we have by exhaustive experiment and use demonstrated that it has less tendency to buckle than any other tie-plate now on the market." Were those statements true?

Objected to as irrelevant.

A. This advertising matter was not written by me, and I am not in a position to vouch for its truth, when I take into consideration the first sentence of the second paragraph, for the reason that the slightly concave portion could not come under the center of the base of every rail, because of the varying weights of rail that would be used with this plate.

1299 X Q. 90. This advertising circular was prepared at the instance of Dilworth, Porter & Co., Ltd., I presume?

A. I should say it was prepared at the instance of Mr. Goldie, and received the approval of Dilworth, Porter & Co.

X Q. 91. What I wish to know is, whether you question the accuracy of the statements which I read?

A. In the main, no.

X Q. 92. Was there any other circular prepared or used by Dilworth, Porter & Co. in connection with the Goldie rib tie-plate, than the one which you have produced?

A I don't recall any now.

X Q. 93. Would you state positively that there was not?

A. I would not.

X Q. 94 When did Dilworth, Porter & Co. first use catalogues or price-lists for tie-plates?

A. I can't give you the date. I should say it was around 1900.

X Q. 95. Have you any specimens of the catalogues or price-lists used by Dilworth, Porter & Company in the early date of their use?

A. Not back of 1900, I don't think.

X Q. 96. Could you produce or furnish to the Commissioner specimens of the catalogue or price-lists used by Dilworth, Porter & Company, for the years 1900 and 1901?

A. We would be glad to furnish you all that are now in our office records. I don't know over what years they would extend.

X Q. 97. You would be willing to allow the examination of such catalogues as are preserved in the office of Dilworth, Porter & Company under the same arrangement that has been suggested as to the books?

1300 A. I see no objection to that.

X Q. 98. About how much did the Goldie Rib tie-plate weigh, each tie-plate?

A. I don't recall. The easiest way to get at that would be to weigh one of these specimens.

X Q. 99. Were these Goldie Rib plates both concave and flat surfaces, of different sizes?

A. The Goldie Rib plate was rolled in different sizes. I could not answer definitely in regard to the quantity that were concave and those that were flat.

X Q. 100. These invoice impression books show a complete record of the sales of the Goldie Rib plate? Was any record kept of the Goldie Rib plates that were furnished or supplied to Railroads for experimental use?

A. That will be found on page 98 of the Sales and Royalty Book.

X Q. 101. Please explain the entries on this page.

A. On page 98 is a record of plates shipped subject to approval. The items are marked in red ink as bill rendered and charged, were afterwards paid for. The rest were not.

X Q. 102. When does this record begin?

A. The record begins in February, 1894, and must not be confused with covering rib plates alone, but also claw plates.

X Q 103. Prior to the date of the beginning of this record just referred to, were there not Goldie Rib plates supplied to railroads for experimental use?

A. There may have been, but no record has been kept.

X Q. 104. No royalties were paid the patentee unless there was a sale?

A. No, sir.

X Q. 105. Was the Goldie Claw plate a lighter or heavier plate than the Goldie Rib plate?

1301 A. That could only be determined upon reflection. It could not be answered by a general statement.

X Q. 106. Which was more expensive?

A. The Goldie Claw was more expensive than the Goldie Rib.

X Q. 107. In 1892 and 1893, it was a period of pioneer and tentative use of tie-plates by railroads, was it not?

A. It was so far as we were concerned, because we were introducing a section and design of plate that was totally different than had previously been offered to the consumer.

X Q. 108. Well, is it not a fact that the general use of tie-plates by railroads has been increasing since 1892?

A. Yes, sir.

X Q. 109. And in 1892 it required considerable argument to convince railroad officials that tie-plates were desirable or necessary and part of the track equipment, did it not?

A. Yes, sir.

X Q. 110. Were there any copies either photographic or in any way of lithographs or cuts, made and distributed of this photograph that has been referred to, of the Goldie plate with a rail on it?

A. There were a number of those copies made and sent to our different agents.

X Q. 111. Were they photographic copies, or reproduced in some other way?

A. All from the same plate.

X Q. 112. And what use was made of these copies by the agents?

A. To aid them in displaying the product of Dilworth, Porter & Company to such customers as might come in their office.

X Q. 113. Now, I take it that there is no way, so far as the records of Dilworth, Porter & Company are concerned, by which the

1302 style or type of the Goldie Rib plate sold to the various railroads which you enumerated, can be determined? I mean as to whether they were concave tops or flat tops?

A. No, sir.

X Q. 114. The dates of these various sales, however, will appear both in the invoice impression book and in the sales book?

A. Yes, sir.

X Q. 115. Could you give us any idea of the extent to which the circular referred to, "Exhibit No. 146," was distributed?

A. No, sir, it would be mere guesswork to attempt that.

X Q. 116. Do you remember when this circular was prepared?

A. The date on the circular will show that, October 1, 1892.

With the reservation of the rights as to the books above made, and to call for any explanation of any entry therein that is not understood, the cross-examination is closed.

Examination closed.

WILLIAM F. SCHLEITER.

This ended the proceedings before me under the present notice.

B. D. GAMBLE,
Commissioner, Acting by Consent as Special Examiner.

1303 UNITED STATES CIRCUIT COURT,
Western District of Pennsylvania, ss:

I, B. D. Gamble, Deputy Clerk of the Circuit Court of the United States in and for the Western District of Penn'a, duly appointed to act as Special Examiner in the foregoing case do hereby certify that the foregoing testimony comprising the depositions of William Goldie and Walter F. Schleiter, were taken on behalf of the complainants in the above entitled cause pursuant to notice before me as Special Examiner at Pittsburgh in the County of Allegheny and State of Pennsylvania, at the Office of H. D. Gamble, Clerk of the Circuit Court of the United States for the Western District of Pennsylvania, 307 P. O. Bldg., commencing the 22nd day of September, 1910, and concluding September 23rd, 1910; that the witnesses William Goldie and Walter F. Schleiter, were each duly sworn by me before the commencement of their respective depositions; that the opposing parties were represented by counsl during the taking of said testimony; that said testimony was reduced to typewriting by Adah H. Mann, a stenographer by me for that purpose appointed, in my presence by consent of counsel for the respective parties; that each witness read over his said testimony; that he signed the same in my presence; that I am not connected by blood or marriage with either of said parties nor interested directly or indirectly in the matter in controversy; and I further certify that the foregoing is a full and true and correct record of the proceedings.

In witness whereof, I have hereunto set my hand and the seal of said Court at Pittsburgh, this 23rd day of September, A. D. 1910.

B. D. GAMBLE,
Deputy Clerk and Special Examiner.

Endorsed: Fees for taking above named testimony amounting to $73.52 have been paid by complainant. B. D. Gamble, Dep. Clk. and Special Examiner.

1304 In the United States Circuit Court for the Northern District of Illinois, Eastern Division.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD.

CHICAGO, ILLS., Sept. 22, 1910.

Proceedings before me, Grace A. Southwell, a Notary Public, acting by consent of counsel as Special Examiner in this cause, at 808 Marquette Bldg., Chicago, Ills., on behalf of the complainant in the above entitled cause.

Present:

Taylor E. Brown, Esq., counsel for complainant.
Frank F. Reed, Esq., counsel for defendants.

And thereupon FRANCIS PAYNE MASON, a witness produced on behalf of complainant, having been first duly cautioned and sworn, testified under oath as follows, in answer to interrogatories by Mr. Brown:

Q. 1. Please state your name, age, residence and occupation.

A. Francis Payne Mason; age 38; residence 395 Oakdale avenue, Chicago, Ills. Occupation, Consulting Chemical Engineer.

Q. 2. State whether or not you are familiar with the German language and read and speak the same.

A. I am familiar with the German language and both read, write and speak it.

1305 Q. 3. Where did you acquire your knowledge of the German language?

A. I was taken to Germany and Switzerland as a child, and spent four years in the public schools of the City of Basel. I subsequently, after a residence of several years in France, studied for two years at Wiesbaden, in Germany. Then two years at the University of Basel, again two years at the University of Bern, one year at the Polytechnicum at Karlsruhe, and several months in the coal districts of Bochum in Germany. The lectures and instruction in these various universities and schools of learning are conducted in the German language.

Q. 4. Please look at the publication that I now hand to you, which appears to be printed in German, and tell me what it is.

A. It is a copy of an issue of August 1, 1887, of Glaser Annals for trade and building matters, Vol. 21, book 3, edited at Berlin, S. W. Lindenstrasse, and sold by commission by the Polytechnic Book Store of A. Seydel, Berlin, W. Wilhelmstr, 84. Serial No. 243. This appears on the first and fifteenth of every month; price per half year

for German and Austria-Hungary ten marks; for foreign issue twelve marks.

Q. 5. Please state whether or not you find in this publication an article by J. W. Post relating to railway tie-plates?

A. On page 42 I find an article entitled "Public Iron Toothplates" communicated by J. W. Post, Engineer of the Netherlands State Railroad Company in Utrecht, and in parenthesis underneath the title "With eleven illustrations." The article is also continued on pages 43 and 44 of the same publication.

Q. 6. Please give a full and complete translation of the entire article, omitting, of course, the illustrations.

A. I have prepared a careful translation of this article and it reads as follows:

1306 *Puddle-iron Toothed Plates.*

Communicated by J. W. Post, Engineer of the Netherlands State Railroad Company at Utrecht.

(With 11 Illustrations.)

Using half-round ties (Fig. 1), the bearing surface of the rail is small. Even with hardwood and under normal conditions of use the base of the rail is pressed into the wood, and, as many specifications allow a splint of 30 mm. such ties need a careful supervision and expensive retrimming during the first few years, until the splint rots away and disappears and the base of the rail finds sufficient support on the real wood.

The means of fastening do not work well with such ties. Hook spikes and wood screws find too little resistance in the splint to lateral bending—as soon as the rail gets sideplay it eats so much more rapidly into the fastening material. Fig. 2 shows a hook-spike found on an European railroad which illustrates what is stated above. The original spike—on an average 16 mm. thick—is at one spot worn out 6.6 mm. The length of the worn spot 27 mm. minus 9 mm. (the thickness of the rail) is equal to 18 mm. and shows that during use the rail went up and down a distance of 18 mm.

The value of such a "fastening" is open to doubt.

Such and similar observations brought many managements to abandon the half-round ties (Fig. 1) and for oak ties to specify a minimum width of splint-free wood under the rail base (Fig. 3). (See foot-note No. 1.) By this means rail and fastening from the very start came in contact with solid wood. In spite of this, the endurance of these expensive ties under the present normal railroad conditions, was hardly satisfactory. Especially as appertains to the holding of the gauge and the slope of the rail, they fell far behind the metallic ties.

1307 Owing to the constantly increasing train-speed, the use of under-plates on wooden ties has become more general. Whereas formerly they were almost never used, except for middle ties

on curves, now, on the contrary, many railroads on straight-away tracks put on each wooden tie two under-plates.

Under-plates perform the function of, or at least should, perform the function of

(1) Distributing as equally as possible the pressure of the rail through which: *a*, the mechanical destruction of the bearing surface of the tie is retarded; *b*, that the bending over of the rail is avoided.

(2) That the spikes or screws can not be bent laterally by the base of the rail, and lastly

(3) That the spikes or screws support each other against lateral displacement.

Many types of under-plates do not fulfill these conditions, or at most do so unsatisfactorily. Some—measured in the direction of the length of the rail—are so short that the contact surface with the ties is hardly greater than it was between the tie and the rail without the under-plate.

Others have a small projection or shoulder on the side of the plate—or the shoulder is the same on both sides, outside and inside. As the Resultant of the rail-pressure falls inside of the rail-axis (see foot-note No. 2) the pressure is unevenly divided upon the wood.

There are also plates which, while rightly dimensioned, are too thin. Through the momentum of reaction from pressure, the projection or shoulder is bent up and the plate is scarcely efficient any more.

The conditions outlined under No. 2 can be fulfilled with profiled plates (see foot-note No. 3) by a suitable form given to the shoulders, against which the spikes or screws can find support (Fig. 4 to 11).

1308 The conditions under No. 3 can be satisfied also. It is desirable that the base of the rail can support itself side-ways on reinforces (Fig. 4 to 11) and through these be prevented from directly eating into the fastening. (Loosening; gauge-widening.)

The use of profiled plates enables in addition, the notching of the ties, and through this the first cause of rotting is avoided, because the sloping of the rail is done in the plate itself (Fig. 6, 7, 8 and 9).

Such plates (Fig. 4) were used to advantage on sawed ties (Fig. 3) in the construction of the Semmering Railroad.

Even if an under-plate should unite all above qualities, the disadvantage still remains that side thrusts are still mostly taken up by the spikes or screws, as the friction of the smooth plate on the ties is very small, the fastenings become loose (re-nailing) and destroy the tie.

This was already observed during the construction of the Brenner Railroad. They tried to transfer the side-thrust, given the plates through the shoulders by the rails, directly to the tie. This was accomplished by means of a wide rib, rolled onto the under-side of the plate, and which was to be let into the wood (Fig. 5).

That this method found few imitators is to be ascribed to the trouble caused by the necessary accurate planing of the notch,

which is especially annoying on curves. The notch also weakens the tie, considerably at this important point and gives the first opportunity for rot to set in.

It is well known that the disadvantages attached to wooden ties and their fastenings may be best overcome by the use of rational puddle-iron ties, and the Netherland State R. R. Co. has supplanted large numbers of wooden ties by puddle-iron ones. (See foot-
1309 note No. 4.) It has been held advantageous though in those spots where the ground is soft and the ballast sinks away and the permanent way has often to be raised to continue the use of wooden ties.

In view of this, the author in 1844 was commissioned to build a solid permanent way, using wooden ties, which should closely approach in endurance and safety the normal permanent way of the company built on iron ties. These considerations, as described above, led to the construction of the variations illustrated in Figs. 6 to 9. The length of the plate (taken in the direction of the rail length) was set a minimum of 140 mm.; the thickness of at least 12 mm. while the inner shoulder (*a, b,* Fig. 6) amounted to about 65 mm. and the outside shoulder (*c, d,* Fig. 6) to about 45 mm.

The shape of the shoulder helps the spikes or screws as much as possible to withstand lateral strainings; in types Figs. 6, 7, 8, the flange of the rail lies between the shoulders and does not touch the fastenings. The plates are made of puddle iron. The slope 1:20 is in the plate itself. (See foot-note No. 5.) The tie is of oak with a sawed upper surface, no notches and at least 10 cm. splint-free wood on the supporting surface. The rails weigh 33.7 and 40 Kg. per meter. (See foot-note No. 6.)

Instead of the wide rib of the Brenner R. R. (Fig. 5) here, three sharp, tooth-shaped ribs, with an ample distance between them (about 34 mm.) are rolled onto the plate. The ribs, which run the full length of the plate are driven by the train traffic into the wood itself wherever wished, that is, with any broadening of the gauge desirable. The plate, when laid, rests on the ribs; and, as the Resultant of the rail pressure falls inside of the rail axis and through this the inner rib receives more pressure than the outer, the inner rib is made higher than the outer.

1310 The ribs, when pressed into the tie, offer a vertical surface to resist lateral thrust, of at least (4 mm. x 5 c. 6) 140; 2100 q. mm. To determine the technicalities of rolling the ribs, and examine on the other hand their practical effect on the track, in July, 1885, standard shaped plates (See Fig. 6) had ribs rolled onto them and in August, 1885, were laid, using ordinary hook spikes for fastenings. As the first impression created was favorable, a special shape was rolled in 1886 (Fig. 7) and a strong wood screw used on the inner side. To get away from the disadvantages of hook spikes it is better to discontinue their use entirely and use a wood screw on both sides (Fig. 8). At the same time this arrangement permits the accurate adjustment of the gauge by drawing the screws up more or less tightly on either side. The breadth of the rail flange always varies several mm. the flange therefore seldom fits

accurately between the two shoulders of the plat. It seems desirable therefore to substitute a wedge plate, 60 mm. long (See Fig. 9) for the inner shoulder; this has the effect, when set up by the vertical pressure of the screw, to press the rail against the outer shoulder. At the same time the plate obviates the local attrition of the screw head on the rail flange. In respect to this protection, this manner of fastening approaches that of iron ties. Using a plate of sufficient thickness a certain amount, if not much, of the weight can be saved by means of weight-saving cavities (*a-a* Fig. 9). The Netherland State R. R. intends shortly to lay a certain number of these ribbed plates (Fig. 9).

The observations to date, made upon oak ties laid and using different puddle-iron ribbed plates, have led to the following conclusions:

1. After from 100 to 500 trains have passed the ribs are passed into the word; knots at the contact points are to be avoided.

1311 2. The boring of the ties must be accurately done and according to special gauges, so that the desired rail gauge be obtained when the ribs have sunk into the ties and reached their definite position.

3. After 20 months' use the rib marks were perfectly sharp and the edges well defined. (See foot-note No. 7.)

4. Gauge and slope maintained themselves during the 20 months better than ever before when using oak ties; in fact nearly as well as when using standard iron ties.

5. The fastenings showed no use, deformation or loosening.

The preliminary results fulfil the aims set originally. Since it appears that the tie, through the use of toothed plates can be protected from mechanical destruction induced at the contact surfaces and holes, it is rational to also protect the wood from rotting by impregnating it. The results obtained and the fact that an oak tie armed with toothed plates is but little more costly than a good iron tie, is inducing the Netherland State R. R. to in future lay the former at such places as were mentioned above where the latter would appear less advantageous.

I will now translate the foot-notes to the Post Article.

1. It is not sufficient that the stipulation apply to the bearing surface alone, but the rail must really be supported for a distance of 100 mm. on the edge: In actual practice this does not amount to quite the same thing.

2. Conf. Jules Michel.—"Resistance of the elements of the track." Gen. Revue of Railroads for July, 1884, and May, 1885.

3. Profiled under-plates necessitate the use of puddle-iron; since the rail direction and the direction in which the plates are rolled at the mill fall together if wrought iron were used the plates

1312 would soon show longitudinal cracks, especially at (*a*) Fig. 4 on straight-away tracks, and at (*b*) Fig. 5 on curves,

4. Description in "Organ for Progress in Railroads" Book I, 1885 and Book 3, 1887. Compare also the thorough and painstaking report of Chief Engineer Bricka to the French Minister on

1313

U.S.Circuit Court
Northern Dist.Ohio
Eastern Division

The Railroad Supply Co.
versus
The Elyria Iron & Steel
Co.,Equity No.7668

Complt s.Exhibit No.152
Post Original Article
In Annalen Glaser
Sep.22/10 Notary Public

Flußeiserne Zahnplatten.

Mitgetheilt von J. W. Post, Ingenieur der Niederländischen Staatsbahn-Gesellschaft in Utrecht.

(Mit 11 Abbildungen).

Bei Verwendung von halbrunden Holzschwellen (Fig. 1) ist die Auflagefläche der Schiene klein; es drückt sich, sogar bei hartem Holz, schon bei normalen Betriebsverhältnissen der Schienenfuſs bald in die Schwelle ein und da viele Bedingnißhefte eine Splintdicke bis 30 mm zulassen, erfordern solche Schwellen in den ersten Jahren eine sorgfältige Ueberwachung und ein kostspieliges Nachdechseln, bis der Splint verfault und verschwunden ist und der Schienenfuſs in dem wirklichen Holze eine genügende Auflagefläche gefunden hat.

Es kommen auch bei solchen Schwellen die Befestigungsmittel nicht genügend zur Wirkung; Hakenägel und Holzschrauben finden im Splint zu wenig Widerstand gegen seitliche Ausbiegung und sobald die Schiene seitlich Spielraum hat, frißt der Fuſs sich um so schneller in die Befestigungsmittel ein.

Fig. 2

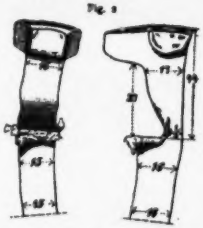


Fig. 2 zeigt einen auf einer Europäischen Bahn gefundenen Haknagel, der oben Gesagtes illustrirt. Der ursprünglich durchgehend 16 mm dicke Haknagel ist an einer Stelle bis auf 6½ mm eingefressen und die Höhe 27 mm der Einfressung zeigt, daſs die Schiene beim Befahren 27 mm — 9 mm (Fuſsdicke) = 18 mm auf und ab ging. Der Nutzen einer solchen «Befestigung» ist fraglich.

Solche und ähnliche Beobachtungen führten viele Verwaltungen dazu, die halbrunden Schwellen (Fig. 1) zu verlassen und für Eichenschwellen eine Minimalbreite splintfreien Holzes unter Schienenfuſs vorzuschreiben (Fig. 3),*) wobei Schiene und Befestigungsmittel vom Anfang an mit wirklichem Holz in Berührung sind.

Trotzdem scheint die Haltbarkeit dieser theuren Schwellen für den jetzigen Normalbetrieb kaum zu genügen; namentlich bezüglich Erhaltung der Spurweite und der Schienenneigung (Kanten) stehen sie hinter den Metallquerschwellen noch weit zurück. Es nimmt deshalb bei immer zunehmender Zug-Geschwindigkeit die Verwendung von Unterlagsplatten auf Holzschwellen immer mehr zu; während dieselben auf Mittelschwellen früher fast nur in Kurven Anwendung fanden, werden gegenwärtig auf vielen Bahnen auch im geraden Gleise auf jede Holzschwelle 2 Unterlagsplatten verlegt.

Unterlagsplatten bewirken oder sollten wenigstens bewirken:

1. daſs der Schienendruck — möglichst gleichmäſsig — vertheilt wird, wodurch a) die mechanische Zerstörung der Auflageflächen der Schwellen langsamer vor sich geht und b) das Kanten der Schienen vermieden wird;
2. daſs die Nägel oder Schrauben vom Schienenfuſs nicht seitwärts ausgebogen werden; endlich
3. daſs die Nägel oder Schrauben zusammenarbeiten gegen seitliche Verschiebung.

Fig. 1.

Fig. 3.

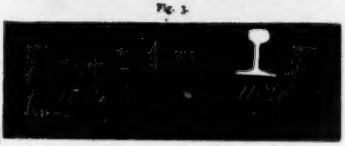
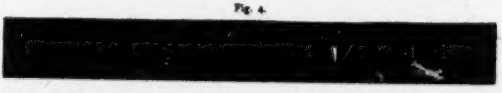


Fig. 4.



Viele Unterlagsplatten-Typen genügen diesem Beruf nicht oder nicht genügend. Einige sind — in der Schienenrichtung gemessen — so kurz, daſs die Berührungsfläche mit der Schwelle kaum gröſser ist, als dieselbe zwischen Schiene und Schwelle ohne Platte wäre. Andere haben zu kleinen Vorsprung seitlich vom Schienenfuſs; oder es ist der Vorsprung auſsen und innen gleich, und da die Resultante des Schienendruckes innerhalb Schienenachse fällt,*) vertheilt sich dann der Druck ungleichmäſsig auf das Holz. Es giebt auch Platten, welche richtig

Fig. 5.

*) Es genügt nicht, daſs die Bedingung im Lastenheft steht, sondern es muſs bei der Abnahme auch wirklich an der Grenze 100 mm festgehalten werden; im Allgemeinen kommt dieses nicht ganz auf's Gleiche hinaus.

*) Comb. Jules Michel, «Résistance des éléments de la voie», Revue générale des ch. d. f. Juli 1884 und Mai 1885.

U.S.Circuit Court
Northern Dist.Illinois
Eastern Division
In Chancery No.29294

The Railroad Supply Co.
versus
The Hart Steel Co. and
Guilford S. Wood

Complainant's Ex.No.152
Post Original Article in
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U.S.Circuit Court
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Post Original Article
In Annalen Glaser.
Sep.22/10 Notary Public

Fig. 6.

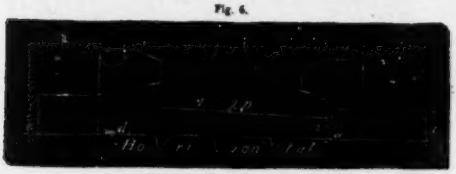


Fig. 7.

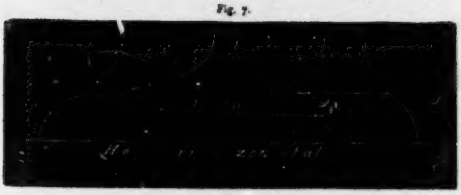


Fig. 8.

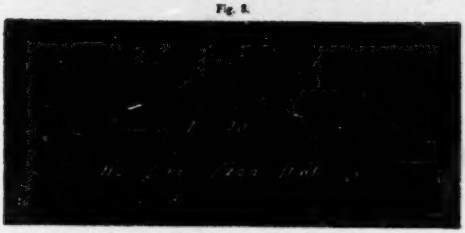
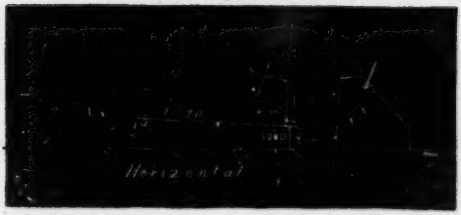


Fig. 8.

Fig. 9.



dimensionirt, jedoch zu dünn sind; durch das Moment der Druck-Reaktion wird dann der Vorsprung aufgebogen und die Platte wirkt kaum mehr.

Der Bedingung sub 2 kann bei profilirten Platten*) genügt werden durch zweckmäßige Form der Leisten, wogegen Nägel und Schrauben eine Stütze finden (Fig. 4bis 11).

Um der Bedingung sub 3 zu genügen, ist es erwünscht, daß der Schienenfuß sich seitlich gegen Ansätze stemmen kann (Fig. 4 bis 11) und durch dieselben verhindert wird, die Befestigungsmittel direkt anzufressen (Lockerung, Spurerweiterung).

Die Verwendung profilirter Platten gestattet außerdem die Einkerbung der Schwellen und damit den ersten Anlaß zum Faulen dadurch zu vermeiden, daß die Neigung in der Platte selbst angebracht wird (Fig. 6, 7, 8, und 9). Es fanden solche Platten (Fig. 4) auf Schwellen mit benäßter Oberfläche (Fig. 3) schon beim Bau der Semmering-Bahn vortheilhaft Verwendung.

Vereinigt nun eine Unterlagsplatte sämmtliche obige Vortheile, so hat der Oberbau dennoch den Uebelstand, daß die seitlichen Kräfte zum größten Theil von den Nägeln bezw. Holzschrauben aufgenommen werden müssen, da die Reibung der glatten Platte auf der Schwelle nur gering ist; die Befestigungsmittel lockern sich (nachnageln) und zerstören die Schwelle.

Schon beim Bau der Brenner-Bahn wurde dieses erkannt und versuchte man die von der Schiene durch die Leisten auf die Platte übertragenen Seitenkräfte direkt auf die Schwelle zu übertragen durch eine unter der Platte angewalzte breite Rippe, welche in das Holz eingelassen wurde (Fig. 3). Daß dieses Beispiel nicht viel Nachahmung fand, ist wohl dem Uebelstande zuzuschreiben, daß das nothwendige genaue Hobeln der Rinne lästig ist, namentlich verwickelt in Kurven mit Spurerweiterung. Auch schwächt die Rinne die Schwelle bedenklich an dieser wichtigen Stelle und giebt eben hier zum Faulen den ersten Anlaß.

Es lassen sich bekanntlich die den Holzschwellen und deren Befestigungsmitteln anhaftenden Nachtheile am gründlichsten durch Verwendung von rationellen Flußeisenschwellen vermeiden, und die Niederländische Staatsbahn-Gesellschaft hat in den letzten Jahren große Quantitäten hölzerner Schwellen durch flußeiserne**) ersetzt; man hält es aber für erwünscht, an denjenigen Stellen, wo der Boden sehr weich ist, die ganze Bettung wegsinkt und der Oberbau somit sehr oft

*) Profilirte Unterlagsplatten bedingen nothwendig Flußeisen als Grundstoff, da die Schienenbefestigung mit der Walzrichtung zusammenfällt, zeigen solche Platten, wenn in Schwellbäumen eingepreßt, bald Längsrisse, namentlich bei a (Fig. 4) im graden Gleise und bei b (Fig. 3) in den Kurven.

**) Beschreibung im Organ f. d. Fortschr. d. Eisenb. W. Heft 1 1885 und Heft 3 1887. Vergl. auch den gründlichen und ausführlichen Bericht vom Oberingenieur Bricka an den französischen Minister der ö. A. über die europäischen eisernen Oberbau-Systeme (Imprimerie nationale, Paris).

U.S.Circuit Court
Northern Dist.Illinois
Eastern Division
In Chancery No.29294

The Railroad Supply Co.
versus
The Hart Steel Co. and
Guilford S. Wood

Complainant's Ex.No.152
Post Original Article in
Annalen Glaser.
Sep.22/10 Notary Public

U.S.Circuit Court
Northern Dist.Ohio
Eastern Division

The Railroad Supply Co.
versus
The Elyria Iron & Steel
Co.,Equity No.7668

Complt's.Exhibit No.152
Post Original Article
in Annalen Glaser.
Sep.22/10 Notary Public

gehoben werden mufs, Holzschwellen beizubehalten. Mit Rücksicht darauf wurde Verfasser im Jahre 1884 beauftragt, einen soliden Oberbau auf Holzschwellen zu konstruiren, der in Bezug auf Betriebssicherheit und Dauer dem normalen Oberbau auf Flufseisen-Querschwellen der Gesellschaft möglichst nahe kommen sollte. Es führten oben beschriebene Erwägungen zur Konstruktion der in Fig. 6 bis 9 dargestellten Varianten.

Die Länge der Platte (in der Schienenrichtung gemessen) wurde auf ein Minimum von 140 mm, die Dicke auf wenigstens 12 mm festgestellt, während der innere Vorsprung (*a b* Fig. 6) ca. 65 mm, der äufsere Vorsprung (*c d* Fig. 6) ca. 45 mm beträgt. Die Form der Leisten bezweckt, die Nägel bezw. Holzschrauben seitlich möglichst zu stützen; bei den Typen Fig. 6, 7 u. 8 liegt der Schienenfufs zwischen 2 Ansätzen und es berührt derselbe die Befestigungsmittel seitlich nicht. Die Platten sind aus Flufseisen. Die Neigung 1:20 liegt in der Platte.*) Die Schwelle ist aus Eichenholz und hat eine beiläufig Oberfläche ohne Kappung mit wenigstens 10 cm splintfreier Holzbreite in den Auflageflächen. Die Schienen wiegen 33,7 und 40 kg pro m**).

Statt der breiten Rippe der Brenner-Bahn (Fig. 5) sind hier 3 scharfe Zähne auf gehöriger Entfernung von einander (ca. 34 mm) unter Schienenfufs an die Platte angewalzt. Es werden die Zähne, welche über die ganze Länge der Platte durchlaufen, vom Zugverkehr selbst in das Holz eingedrückt und zwar wo man will, also mit jeder beliebigen Spurerweiterung. Beim Verlegen ruht die Platte nur auf den 3 Zähnen, und da die Resultante des Schienendruckes innerhalb Schienenachse fällt, somit der innere Zahn mehr Druck bekommt als der äufsere, ist der innere Zahn höher als der äufsere genommen. Wenn die Zähne in das Eichenholz gedrungen sind, bieten sie den seitlichen Kräften eine vertikale Fläche von wenigstens (4 mm + 5 mm + 6 mm) 140 mm = 2100 qmm.

Um einerseits die Ausführbarkeit der Zähne beim Walzen, andererseits die Wirkung derselben im Gleise praktisch zu untersuchen, wurden im Juli 1885 an einem bestehenden Profil (Fig. 6) Zähne gewalzt und diese Platten wurden im August 1885 mit gewöhnlichen Haknägeln verlegt.

Da der vorläufige Eindruck günstig war, wurde 1886 ein spezielles Profil gewalzt (Fig. 7), wobei an der Innenseite eine kräftige Holzschraube Verwendung fand.

Um aber die den Haknägeln anhaftenden Uebelstände ganz zu vermeiden, ist es besser, dieselben ganz wegzulassen und (Fig. 8) innen und aufsen eine Holzschraube anzubringen. Zugleich gestattet diese Anordnung, die Spurweite durch mehr oder weniger Andrehen innen oder aufsen, genau zu regeln.

Die Breite des Schienenfufses schwankt immer um einige Millimeter; der Fufs paßt daher selten genau zwischen die 2 Ansätze der Platte. Es scheint daher erwünscht, den inneren Ansatz durch eine 60 mm lange keilförmige Klemmplatte (Fig. 9) zu ersetzen, welche bewirkt, daß der vertikale Schraubendruck die Schiene gegen den äufseren Ansatz preßt; zugleich vermeidet die Platte örtliches Eintressen des Holzschraubenkopfes in den Schienenfufs. Bezüglich dieser Schonung kommt diese Befestigung derjenigen auf Eisenschwellen nahe.

*) Es lassen sich die Zähne natürlich auch anwenden auf Schwellen mit Kappung 1:20 (Fig. 10 und 11); Schwellen ohne Kappung und Platten mit Neigung sind aber bei weitem vorzuziehen.

**) Vergl. Seite 189 der *Annalen* Bd. XX, 1887.

Fig. 10.

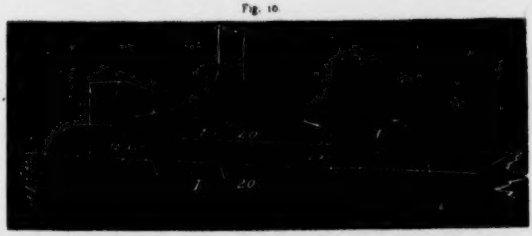
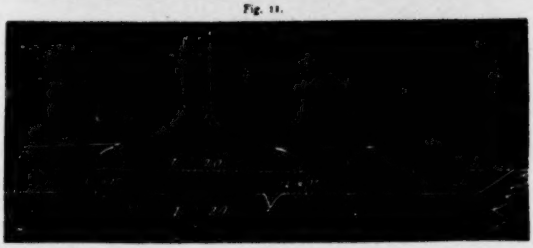


Fig. 11.



Bei gehöriger Dicke der Platte kann durch Aussparungen *a* (Fig. 9) etwas, wenn auch nicht viel, an Gewicht erspart werden.

Die Niederländische Staatsbahn-Gesellschaft beabsichtigt auch von diesen Zahnplatten (Fig. 9) demnächst eine Partie zu verlegen.

Die bisherige Beobachtung der verlegten Eichenschwellen mit verschiedenen flufseisernen Zahnplatten führt zu folgenden Bemerkungen:

1. Nach 100 bis 500 Zügen sind die Zähne in das Eichenholz gedrungen; Aeste sind an den Auflagestellen zu vermeiden.
2. Das Vorbohren der Schwellen mufs genau und nach speziellen Schablonen geschehen, derart, daß die gewünschte Spurweite erreicht wird, wenn die Platte ihre definitive Lage (Zähne im Holz) einnimmt.
3. Nach 10monatlichem Betrieb waren die Zahneindrücke ganz scharf und deren Kanten wohl erhalten.*)
4. Spurweite und Schienenneigung haben sich in den 10 Monaten besser erhalten als je früher auf Eichenschwellen, fast ebenso gut wie bei den normalen Flufseisenschwellen.
5. Die Befestigungsmittel zeigten keine Abnutzung, Deformation oder Lockerung.

Die vorläufigen Resultate entsprechen also durchaus dem beim Entwurf gestellten Ziel.

Nun es möglich scheint, die Schwelle durch den Gebrauch von Zahnplatten gegen mechanische Zerstörung der Auflageflächen und der Löcher zu schützen, ist es rationell, das Holz durch Imprägniren auch vor Fäulnifs zu bewahren.

Die erzielten Resultate und die Thatsache, daß eine mit Zahnplatten armirte Eichenschwelle nicht viel theurer ist als eine gute Flufseisenschwelle, veranlassen die Niederländische Staatsbahn-Gesellschaft, erstere künftig an solchen oben erwähnten Stellen zu verlegen, wo das Terrain für die Verwendung letzterer weniger geeignet scheint.

*) Durch Ministerial-Erlafs vom 30. Januar 1886 wurde den Königlichen Direktionen der preufsischen Staatsbahnen die Verwendung von Platten mit gewalzter Unterfläche empfohlen. Verfasser fand selber auf einigen Strecken einer seiner Ansicht nach weniger glücklichen Anwendung der Zähne: es waren deren ca. 20 ganz kleine angebracht, derart nahe bei einander, daß die Holzfaser zerstückelt und pulverisirt werden mufs. Es werden vermuthlich diese Platten die Schwelle mehr zerstören als schonen.

U.S.Circuit Court
Northern Dist.Illinois
Eastern Division
In Chancery No.29294

The Railroad Supply Co.
versus
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European Iron Superstructures for Railroads. (National Printing Office.)

5. The teeth can naturally be used on ties with sloped notches, ratio 1 to 20; Figs. 10 and 11. Ties without notches but with sloped plates are much preferable.

6. Compare page 189 of the Annals. Vol. XX, 1887.

7. Through a Ministerial Act of January 30, 1886, the use of toothed plates was recommended to the Royal Directors of the Prussian State Railroads. The author has since found on several stretches of road a form of these toothed plates that he cannot approve of. There were about twenty very small teeth, placed so closely together that the wood fibre was chopped up and pulverized by their action. It is obvious these plates would injure, rather than protect, the ties.

By Mr. Brown: The pamphlet identified by the witness is handed to the Notary to be suitably marked for identification and will be produced at the hearing of this cause and also be subject to the examination of defendants' counsel on his request; and pages 42, 43 and 44 of this article, together with the illustrations thereof on said pages, are introduced in evidence as an exhibit and the same marked as follows: "Complainant's Exhibit No. 152 Post Original Article in Annalen, Glaser, Sept. 22, 1910, Grace A. Southwell, Notary Public."

By Mr. Reed: Objected to as not proven and as not rebuttal.

Direct examination closed.

(Here follow copies of original reprint marked pages 1313 to 1318.)

1319 Cross-examination by Mr. Reed:

X Q. 1. Is this translation prepared by you a complete, accurate and careful translation of the entire article referred to?

A. It is.

X Q. 2. Have you translated in the same way the foot-notes to the article and indicated them in your translation?

A. Yes, I have.

X Q. 3. In Fig. 5 in connection with this article what is the meaning of the word nei gung?

A. The word means slope, or inclination.

X Q. 4. In Figs. 1 and 2 the word Holz appears. What is its significance?

A. It means wood, or tie, in this case.

X Q. 5. What is the meaning of the word splint in Fig. 1?

A. Splint is the soft part of the wood underneath the rail.

X Q. 6. And I suppose the word horizontal means horizontal.

A. Yes, the same thing in English.

X Q. 7. What are the measurements indicated on the drawings?

A. Measurements are all given in the Metric System.

X Q. 8. What is the translation of the title "Annalen Fur Gewerbe & Bauwesen Herausgegeben Von F. C. Glaser?

A. Annals for trade and building matters. Issued by F. C. Glaser.

X Q. 9. Please state the name and address of the publisher as it appears on the pamphlet?

A. The publisher and issuer is at the address Berlin, S. W.
1320 Linden-Strausse, 80. Sold at commission by the Polytechnical Book Store of A. Seydel, Berlin W. Wilhelmstr, 84.

X Q. 10. And what is the date of the publication?

A. The date is August 1, 1887.

Cross-examination closed.

Examination closed.

FRANCIS PAYNE MASON.

This ended the proceedings before me.

GRACE A. SOUTHWELL,
Notary Public.

UNITED STATES OF AMERICA,
State of Illinois, County of Cook, ss:

I, Grace A. Southwell, a notary public, in and for the County of Cook and State of Illinois, do hereby certify that the foregoing deposition of Francis Payne Mason was taken before me pursuant to agreement, at the offices of Messrs. Poole & Brown, suite 808 Marquette building, Chicago, Illinois, beginning on Thursday, Sept. 22, 1910, at 10:30 a. m., as therein appears; that the deposition was taken on behalf of the complainant to be used on the hearing of a certain cause now pending in the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois, in Chancery, No. 29,249, wherein The Railroad Supply Company is the

complainant and The Hart Steel Company and Guilford S. Wood are the defendants; that the parties to said cause were present at the taking of the same, complainant by its counsel, Col. Taylor E. Brown, and defendants by their counsel, Frank F. Reed, Esq., as therein appears; that before deposing the said Francis Payne Mason was by me duly cautioned and sworn to testify to the truth, the whole truth and nothing but the truth, in the cause aforesaid, and that said deposition was reduced to writing on a typewriting machine by me from statements of the said Francis Payne Mason, and the same was duly subscribed to by the said witness in the presence of counsel and before me.

1321 & 1322 And I do further certify that I am neither attorney nor of counsel for any of the parties to the above entitled cause, nor related by blood or marriage to either of said parties or to said counsel, and am nowise interested in the result of said cause.

I further certify that my fees as notary public, for typewriting and marking exhibits, amounting to $9.75 have been paid by the complainant.

I do further certify that the foregoing is a true record of the depositions taken and of the proceedings had before me, pursuant to the agreement aforesaid, between the dates mentioned.

In witness whereof, I have hereto set my hand and affixed my notarial seal, this 22d day of September, A. D. 1910.

[SEAL.] GRACE A. SOUTHWELL,
Notary Public.

1323 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

Notice for the Examination of Witnesses.

De Bene Esse.

To Frank F. Reed, Esq., Edward S. Rogers, Esq., Solicitors for Defendants, Rector Building, Chicago, Illinois.

DEAR SIRS: You will please take notice that beginning at ten (10) o'clock in the forenoon on Monday, December 12, 1910, before B. C. Miller, Clerk U. S. Circuit Court at Cleveland, Ohio, or other competent officer, at the office of said Miller in the U. S. Postoffice Building, Superior St. and the Square, Cleveland, Ohio, we shall take the depositions de bene esse of W. Stacy Miller, H. B. Wick and J. L. Barnard, each of whom resides in Elyria, Ohio, more than one hundred miles from Chicago, Illinois, where the court at which the

above entitled cause will be tried is appointed by law to be held; the depositions so taken to be read in evidence at the final hearing and trial of said cause on behalf of the complainant.

1324 The taking of these proofs will be continued from day to day until completed.

You are invited to be present and cross-examine the witnesses orally if you so desire.

Chicago, Illinois, December 8, 1910.

POOLE & BROWN,
Solicitors for Complainant.

The foregoing notice is acknowledged and copy thereof received this 8th day of December, 1910, at Chicago, Illinois.

FRANK F. REED,
EDWARD S. ROGERS,
Solicitors for Defendants.

1325 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

CLEVELAND, OHIO, December 12, 1910.

Proceedings before me B. C. Miller, in accordance with the attached notice, at office of the clerk of the United States Circuit Court, Cleveland, Ohio.

Present:

William Rothenberg, Esq., representing the complainant.
A. T. Hills, Esq., representing the defendants.

And thereupon, H. B. Wick and J. L. Barnard appeared in response to subpœna and were duly cautioned and sworn as witnesses in this cause on behalf of the complainant and excused until Monday, December 19, 1910, by agreement of counsel.

And thereupon an adjournment was taken to Monday, December 19, 1910.

B. C. MILLER, *Examiner.*

1326 CLEVELAND, OHIO, December 19, 1910.

Met pursuant to adjournment.

Present:

Col. Taylor E. Brown, on behalf of the complainant.
Frank F. Reed, Esq., and A. T. Hills, Esq., on behalf of the defendants.

And thereupon W. S. MILLER, Esq., having been subpœnaed as a witness in this cause on behalf of the complainant to appear Monday, December 12, 1910, and having been excused on account of a bereavement in his family, but now appearing and having been first duly cautioned and sworn, answered to interrogatories by Mr. Brown as follows:

Q. 1. Please state your name, age, residence and occupation?
A. W. S. Miller, 46 years, president of the Hart Steel Company, Elyria, Ohio.
Q. 2. And what position or office do you occupy in the Elyria Iron and Steel Company?
A. President.
Q. 3. Is it a fact as stated in the deposition of the defendant's witness, Willis McKee, that the Hart Steel Company *is* not a manufacturing concern, but is the selling agent of the Elyria Iron and Steel Company?
A. It is.
Q. 4. For how long a time has this relation existed?
A. Since the organization of the Hart Steel Company.
Q. 5. And what was the date of the organization of that company as nearly as you can tell?
1327 A. I would be unable to answer that without referring to records.
Q. 6. Will you please ascertain the information and be prepared to tell us at a subsequent session the date of the organization of the Hart Steel Company?
A. I will.
Q. 7. When did the Elyria Iron and Steel Company first manufacture tie-plates of any description?
A. I would be unable to answer that without referring to records.
Q. 8. Was it as long ago as five years?

Mr. Reed: This question and the preceding one is objected to on the ground that neither is proper rebuttal in the case, and counsel is requested to state in what way the information desired is proper as rebuttal.

A. I prefer not to answer without referring to the records.
Q. 9. Will you examine your records for this purpose and be prepared at the next session to answer this question?
A. I will.
Q. 10. The defendant's witness Carter Blatchford has testified that

Spencer Otis and Company were at one time the western sales representatives of the Hart Steel Company and of the Elyria Iron and Steel Company, is that true?

Mr. Reed: That is objected to as not proper rebuttal and the same request as before made.

A. They were representatives of the Hart Steel Company.

Mr. Reed: Motion to strike out answer on the same grounds and also as irrelevant, immaterial and improper.

1328 Q. 11. Then Spencer, Otis and Company was not the western sales agent or representative of the Elyria Iron and Steel Company, was it?

Mr. Reed: Objected to as not rebuttal examination and as irrelevant, incompetent and immaterial.

A. They never represented the Elyria Iron and Steel Company.

Q. 12. Was the relation of western sales representative of the Hart Steel Company by Spencer, Otis and Company the subject of any written memoranda or agreement, whereby the date of that relationship can be definitely determined?

Mr. Reed: Same objections and each of them.

A. There was a written contract which sets forth the date.

Q. 13. Do you know the date of that arrangement?

Mr. Reed: Same objections.

A. I do not.

Q. 14. Is there any record, memorandum, or entry in any of the books or records of the Hart Steel Company, other than said contract which will give the date of the beginning of the arrangement between the Hart Steel Company and Spencer, Otis and Company?

Mr. Reed: Same objections and each of them.

A. Not that I remember of.

Q. 15. Do you know the date when this arrangement terminated?

Mr. Reed: Same objections as above.

A. I do not.

Q. 16. Is there any record or data in existence from which you can determine this date and if so will you examine the same and be prepared to answer this question at a subsequent session?

Mr. Reed: Same objections and each of them to each ques
1329 tion, and also special objection as to any inference or im plication that even if the witness does obtain the informa tion he is obligating himself to testify. So far as merely preparing himself by getting information there is no special objection, but i must be understood that the witness is not agreeing to testify if i should be deemed proper for him to refuse.

A. I assume that there must be some data and if it can be foun will answer the question.

Q. 17. As western sales agent or representative of the Hart Steel Company, did Spencer, Otis and Company have unlimited or limited jurisdiction as to territory?

Mr. Reed: Same objections, statement and limitation, also an objection on the ground that this is an attempt to have the witness testify as to the contents of a written instrument or contract.

A. The contract would give this information.

Q. 18. And will you produce this contract or so much thereof as will disclose its date and this information as to territory?

Mr. Reed: Same objections, statement, and limitation and the witness is advised that he is not obliged to obligate himself positively to produce the contract and that if he chooses he can state that the will produce the contract if it is deemed proper and reserve his rights in that respect.

A. I will produce the contract which I believe will give the information as to territory.

Q. 19. What was the meaning and purport of the expression "western sales representative or agent"?

Mr. Reed: Same objections, statement and limitation, also as an attempt to have the witness construe and testify as to the
1330 contents of a written document.

A. The document in question will set forth the meaning as I understand it.

Q. 20. And what is the understanding that you have?

Mr. Reed: Same objections as heretofore and each of them, also as calling for the opinion of the witness and therefore improper.

A. I am not able to state what the meaning of the contract is without referring to the same.

Q. 21. It is a fact, is it not, that during the period that Spencer, Otis and Company was the western representative of the Hart Steel Company, Spencer, Otis and Company was not a manufacturer of tie-plates?

Mr. Reed: Same objections.

A. Not to my knowledge.

Q. 22. It is also true, is it not, that during that period the Elyria Iron and Steel Company manufactured all the tie-plates which Spencer, Otis and Company sold for or on account of the Hart Steel Company?

Mr. Reed: Same objections and as not proper rebuttal.

A. So far as I know I think that was the case. The contract would probably give definite information concerning it.

Q. 23. State whether or not you were connected with the Hart Steel Company during the period of time that Spencer, Otis and Company represented it and if so in what capacity?

Mr. Reed: Same objections as heretofore and each of them.

A. Vice-president.

Q. 24. And when did you become president of the Hart Steel Company?

Mr. Reed: Objections repeated.

1331 A. Upon the resignation of H. H. Hart.

Q. 25. And about when was that?

Mr. Reed: Same objections.

A. I would be unable to say without referring to records.

Col. Brown: Please examine your records for that purpose.

Q. 26. What were your duties, if any, with relation to the sales of the Hart Steel Company?

Mr. Reed: Objected to as not proper rebuttal, irrelevant, incompetent and immaterial, and to the extent that such duties were defined either by resolution or by-laws or written instruments objected to as secondary evidence and conclusion of the witness.

A. I had full charge of all the sales.

Q. 27. And were Mr. H. B. Wick and Mr. J. L. Barnard connected with the Hart Steel Company during this same period?

Mr. Reed: Same objections so far as applicable.

A. They were.

Q. 28. And what positions did they hold in the company at that time?

Mr. Reed: Same objections.

A. Treasurer, Mr. H. B. Wicks; secretary, J. L. Barnard.

Q. 29. And in handling the sales of the Hart Steel Company with what person or officer or member of the firm of Spencer, Otis and Company did you personally have to deal?

Mr. Reed: Same objections.

A. With a few exceptions, Mr. Spencer Otis.

Q. 30. Is there any record of the Hart Steel Company or of the Elyria Iron and Steel Company that will show the kind of
1332 tie-plates, the number or quantity of tie-plates and the railroad to whom the same were delivered or on whose account they were purchased, which were sold by Spencer Otis and Company during the period it represented the Hart Steel Company?

Mr. Reed: Objected to as not proper rebuttal, as irrelevant, immaterial and incompetent and as an attempt to ascertain facts which are the private concern of the defendants and have no bearing in this case.

A. I have no knowledge of any record, but assume there must be some information.

Q. 31. Would not the books, mill orders, shipping invoices or bills and other data of the Elyria Iron and Steel Company show the style

and number of tie-plates manufactured by it during this period and the name of the consignee to whom the tie-plates were shipped?

Mr. Reed: Same objections as above.

A. They undoubtedly would.

Q. 32. Are there not some records, books of account or invoices of the Hart Steel Company that would also give this information?

Mr. Reed: Same objections.

A. There may be.

Q. 33. Were the commissions or compensation that was paid to Spencer Otis and Company for services as western representative, paid directly by the Hart Steel Company or by the Elyria Iron and Steel Company?

Mr. Reed: Same objections.

A. I assume by the Hart Steel Company as their contract was with that company.

Q. 34. And would not the books of account, which show these commissions or payments for compensation, disclose the quantity of tie-plates sold by Spencer Otis and Company for the Hart
1333 Steel Company during the period referred to?

Mr. Reed: Objection repeated.

A. I am not prepared to say that they would.

Q. 35. Was the commission paid to the Spencer Otis and Company by the Hart Steel Company at so much per ton or so much per quantity of plates, and in either event could not the quantity of plates be figured out by you, or under your direction, after ascertaining the amount of commissions paid to Spencer Otis and Company during that period?

Mr. Reed: Objections and each of them repeated to each part of this question. That part of the question referring to the contract also objected to on the ground that it calls for secondary evidence and the conclusion of the witness.

A. The contract will set forth the manner in which Spencer Otis and Company were to be paid. I doubt my ability to arrive at any figure as to number of plates as there is a wide difference of the number of plates in a ton of the various styles.

Q. 36. But from the commissions that were paid, as shown by the books, it would be possible, would it not, to figure out the tonnage, that is, the total number of tons of tie-plates sold by Spencer Otis and Company for the Hart Steel Company during this period?

Mr. Reed: Same objections, also as calling for the conclusions and conjecture of the witness.

A. It might be, but I would hardly feel myself competent to do this.

Q. 38. Well, we will have to get you some assistance I am afraid. What was the capacity of the mill of the Elyria Iron and Steel Company for the rolling of tie-plates and what was the capacity for the punching of tie-plates in November, 1907?

1334 Mr. Reed: Objected to as improper rebuttal, irrelevant, immaterial and incompetent.

A. It would be necessary for me to refer to data before I could reply to this question.

Q. 39. Between the date when the Elyria Iron and Steel Company began the manufacture of tie-plates and November, 1907, were the facilities for the rolling of tie-plates by the turning of new rolls, etc., and the facilities for the punching of tie-plates increased in any manner, or did you have in November, 1907, practically the same equipment that you had when you began the fabrication of tie-plates?

Mr. Reed: Same objections.

A. As I remember it, I think we must have increased our equipment of rolls and also the number of presses, but to what amount I am not able to say.

Q. 40. You state, "I think we must." Are you certain that during that period you increased your facilities in the manner stated, or is that simply your present opinion?

Mr. Reed: Same objections.

A. I am not certain that we did, but our records would show.

Q. 41. State as nearly as you can the style or configuration, and also the trade-name of the plate that was sold by Spencer Otis and Company during the period of its arrangement with the Hart Steel Company?

Mr. Reed: Same objections.

A. I would have to refer to the contract to get that information.

Q. 42. Do not you recall at this time the trade or shop-name or names of the plate or plates that were manufactured by the
1335 Elyria Iron and Steel Company during this period and sold by the Spencer Otis and Company?

Mr. Reed: Same objections.

A. I would be unable to give this information from memory.

Q. 43. Do you remember the style or configuration, or the name of the very first tie-plate manufactured and sold by the Elyria Iron and Steel Company?

Mr. Reed: Same objections.

A. The very first plate which we rolled I think was what was known as the Hart plate and had a corrugated upper surface with four lower flanges running parallel with the grain of the tie.

Q. 44. And did Spencer Otis and Company sell any of those plates?

Mr. Reed: Same objections.

A. I imagine that they must have.

Q. 45. Describe the McKee plate that was made by the Elyria Company and sold by the Spencer Otis and Company?

Mr. Reed: Same objections and also as assuming a fact not proven.

A. The McKee plate was flat on its upper surface with a shoulder of varying heights running across the grain of the tie, with four flanges on the underside running parallel with the grain of the tie. I am not prepared to say that Spencer Otis and Company sold any of these plates.

Q. 46. As a matter of fact is it not true that all or practically all the tie-plates sold by Spencer Otis and Company during the period of its arrangement with the Hart Steel Company of plates manufactured by the Elyria Iron and Steel Company, were of the style or type known as the Hart plate?

Mr. Reed: Same objections.

1336 A. The records would give this information.

Q. 47. And what is your best opinion on the subject?

Mr. Reed: Same objections and also as calling for secondary evidence.

A. I am not able to give an opinion, and would prefer to refer to the records.

Q. 48. Do you mean that you are able to give an opinion but prefer not to answer without consulting the records, or do you mean just what you said, "I am not able to give an opinion"?

Mr. Reed: Same objections.

A. I do not wish to trust to my memory on matters of this kind.

Q. 49. Willis McKee, general superintendent of the Elyria Iron and Steel Company, testified on behalf of the defendant in this cause on March 10, 1910, and stated in answer to X Q. 49 that the total output of tie-plates of all kinds by the Elyria Iron and Steel Company, from the time when he first went with that company, in May, 1904, to date (that is, the day he was testifying, March 10, 1910), was between 60,000 and 75,000 tons. How does that figure accord with your best recollection as to accuracy?

A. I would not even be able to guess.

Q. 50. Would you think that you had sold more than that number of tie-plates during that period, or less?

A. I could not say.

Q. 51. Can you say whether or not your company manufactured and sold any tie-plates prior to May 1, 1904, the date when McKee said that he went to work for the Elyria Iron and Steel Company?

Mr. Reed: Objected to as improper rebuttal, irrelevant and immaterial.

A. Not without referring to the records.

Q. 52. Have you any personal knowledge of the sale of
1337 tie-plates of any kind by the Hart Steel Company through Spencer Otis and Company or otherwise, or by the Elyria Iron and Steel Company, during the period that Spencer Otis and Company represented your company, to either the Adirondack &

St. Lawrence Railroad or the New York, Ontario & Western Railway?

Mr. Reed: I don't recall the testimony on that subject if there was any and have not the evidence with me, so I will reserve the usual objections to the question.

A. I would be unable to say from memory. The records will undoubtedly give the information.

Q. 53. I will ask you the same question with respect to the following railroads: Atlantic Coast Line, Boston Elevated Railroad; Baltimore and Ohio, Coney Island and Brooklyn, Interboro Rapid Transit Company, and Long Island Railroad. That is, do you recall that your company manufactured and sold through Spencer Otis and Company any tie-plates to either of these roads during the period that Spencer Otis and Company was the western sales agent of your company?

Mr. Reed: Same statement and objections as before.

A. I would be unable to state without referring to the records.

Q. 54. And I will ask you the same question, similarly limited as to date, with respect to the Lake Erie and Western Railroad, the Norfolk and Western Railroad, Oglesby and Granville Railroad, Virginia Railway and Western Maryland Railway?

Mr. Reed: Same statement and same objections.

A. I would be unable to state without referring to the records.

Q. 55. You observed, did you not, that each of the roads
1338 mentioned in my preceding three questions are what might be termed eastern roads, rather than western roads, and I asked you the questions with respect to these roads in particular because Spencer Otis and Company was at that time, as I understood your testimony, the western representatives of the Hart Steel Company, and it did not seem to me consistent that they would be selling to eastern railroads. Are you prepared, therefore, to state either that your company did or did not sell through Spencer Otis and Company, during the period of its contractual relations with you or with the Hart Steel Company, any tie-plates to either of the eastern roads mentioned in my questions Nos. 52, 53 and 54?

Mr. Reed: Same objections.

A. I am not familiar enough with some of these roads to know what their exact location is. While it is true that Spencer Otis and Company carried the title of western representatives, it would be necessary to refer to the contract to ascertain just what roads they were permitted to sell, and I would not be able to say without referring to the records that any tie-plates were sold to any of these roads.

Q. 56. It is a fact, is it not, that during the period of the Spencer Otis and Company contract your company maintained an eastern office and sold the eastern roads?

Mr. Reed: Same objections.

A. It is true that we did maintain an eastern office, but I am not prepared to say that the eastern office sold all the eastern roads.

Q. 57. Is it or is it not a fact that between January 1, 1902, and November, 1907, the Elyria Iron and Steel Company, or the Hart Steel Company, or both through Spencer Otis and Company sold tie-plates to any of the following railroads, namely: Atchison, Topeka & Santa Fe; Arizona and New Mexico; Ann Arbor;
1339 Bay Point and Clayton; Chicago and Great Western; Chicago and Oak Park Elevated; Calumet and Hecla Mining Company; Chicago, Rock Island & Pacific; Chicago & Northwestern; Chicago & Alton; Chicago, Milwaukee & St. Paul; Colorado & Southern; Chicago, St. Paul, Minneapolis & Omaha; California and Northwestern; Colorado Midland; Detroit, Toledo and Ironton; Denver & Rio Grande; Evansville & Terre Haute; Gulf, Colorado and Santa Fe; Grand Rapids and Indiana; Illinois Central; Kansas City, Mexico & Orient; Lake Superior and Ishpheming; Minneapolis & St. Louis; Metropolitan West Side Elevated; Mill Valley and Mt. Tamalpais; North Side Street Railroad; Oregon Short Line; Superior & Southeastern; San Pedro, Los Angeles & Salt Lake; San Jose and Santa Clara; Terminal Railway Association of St. Louis; Utah Copper Company; United Railways of San Francisco; Western Pacific; Yazoo & Mississippi Valley, and Yosemite Valley?

Mr. Reed: Statement and objections repeated.

A. I would not be able to state without referring to the records.

Col. Brown: Complainant's counsel, in order to save time of both witness and counsel, requests the witness to examine the records, or cause the same to be examined and produced for such purpose, for the purpose of informing himself accurately and thus enabling him to testify definitely as to the sales made through Spencer Otis and Company, during the contractual period regarding which he has testified, of all kinds of tie-plates, the name of the purchasers and consignees, the date of shipments, the quantity of tie-plates sold in each instance, either in numbers or by tons as most convenient to the witness, and
1340 also whether or not the plates thus manufactured by the Elyria Iron and Steel Company and sold by Spencer Otis Company were billed to the railroad direct from the Elyria Iron and Steel Company, or through the Hart Steel Company, or Spencer Otis and Company. Examination is requested and the production of the books or memoranda upon which it is based is called for, in order to ascertain merely the facts inquired of and with no desire or intention of further inquiring or seeking any information concerning the price at which the tie-plates were sold, or any financial dealings between the parties inquired of, or any other matters not directly and specifically relating to the matters to which questions have been directed.

With this explanation as to the purpose of my inquiry, I ask you to prepare yourself by the examination suggested so that you may answer more directly and specifically at a subsequent session.

Q. 58. Will you examine the books, records, data and any other source of information of the Hart Steel Company or the Elyria Iron

and Steel Company, or both, after the adjournment today so that you will be prepared to answer the various questions that have been asked you this morning and respecting which you have replied that you preferred not to answer without referring to the records?

Mr. Reed: As at present advised I will enter an objection to this request on the ground that the same is not proper rebuttal and is irrelevant and immaterial.

A. I will.

Recess.

Q. 59. Were any of the tie-plates which you have described as the McKee tie-plate sold by Spencer Otis and Company for or on
1341 account of the Elyria Iron and Steel Company, or Hart Steel Company, during the contractual period referred to?

Mr. Reed: Same objections.

A. Not that I remember of. The records may show that there were.

Q. 60. Did Carter Blatchford, who testified on behalf of the defendant, personally sell or have anything to do with the selling of any tie-plate manufactured by the Elyria Iron and Steel Company, or the Hart Steel Company, during the contractual period referred to?

Mr. Reed: Same objections.

A. Not to my knowledge.

Q. 61. Is it true that the mill of the Elyria Iron and Steel Company at the present time has a capacity of turning out between 40,000 and 45,000 tons of tie-plates per year, and that the punching capacity of your mill is only 30,000 to 35,000 tons per year as testified to by Willis McKee in his answer to Q. 38 on direct examination?

A. Mr. McKee would probably be better able to pass judgment on this than I would as he is the mill superintendent.

Col. Brown: The answer is objected to as not responsive to the question and the question is repeated.

Q. 62. Question repeated?

A. I have never ascertained what our capacity might be as to rolling or punching as this varies, I understand, with the character of plate for which we have orders.

Q. 63. Do you mean to say that as president of the Elyria Iron and Steel Company you do not know the capacity of your mills for turning out tie-plates?

Mr. Reed: Same objections.

A. I know the number of tons of tie-plates that might be
1342 produced of a given kind and that might also be punched.

Q. 64. Please state, then, your best judgment on knowledge of the maximum tonnage of tie-plates that could be rolled and punched, that is, complete tie-plates, by the Elyria Iron and Steel

Company with their present facilities, I am speaking now as to equipment not workmen?

Mr. Reed: Same objections.

A. If the tie-plates were ordered one-quarter inch in thickness the maximum tonnage might be 25,000 tons. If they were ordered one-half inch in thickness, the maximum tonnage might be 45,000 tons. In the punching of tie-plates this varies with the character of plate which the presses are required to punch.

Q. 65. Then as I understand you the thicker the plate the greater the punching capacity of your mill at the present time. Is that correct?

A. It is, in tons.

Q. 66. And does the thickness of the tie-plate determine the capacity of your presses for punching, or the capacity of your rolls?

A. It determines the capacity of both mill and presses.

Q. 67. And what is the usual or average thickness of the tie-plate that your company has turned out, quarter-inch or half-inch?

Mr. Reed: Same objections.

A. I don't know that there is any average as the thickness runs in fractions from a quarter to half-inch.

Q. 68. And as the capacity of your mill is some 15,000 tons less when turning out quarter-inch plates than when turning out plates a half-inch in thickness, what would be the tonnage of your mills if the plates were, say, three-eighths of an inch thick?

Mr. Reed: Same objections.

1343 A. I should imagine about 35,000 tons.

Q. 69. Why do you say the capacity for turning out three-eighths of an inch thick plates would be more or greater rather, than the capacity for turning out quarter inch plates and the capacity for turning out half-inch plates is still greater than either three-eighths inch or quarter-inch, after you have said in answer to Q. 65 that the greater the thickness the greater the punching capacity?

Mr. Reed: Same objections and also as an attempt to cross-examine one's own witness.

A. For the reason that different size blooms of varying weights are used in the rolling of plates of varying thickness and the mill production is cut down in tonnage as the blooms decrease in weight.

Q. 70. That there may be no misunderstanding, I will ask you this question: Do I understand you correctly that, with the present equipment of your mill, the maximum tonnage of the Elyria Iron and Steel Company per annum of plates one-quarter inch in thickness might be 25,000 tons, of plates three-eighths inch in thickness might be about 35,000 tons and of plates one-half inch in thickness might be 45,000 tons?

A. You do.

Q. 71. Please look at "Complainant's Exhibit No. 16, Photograph Defendant's Tie-plate" and state whether you recognize this as a correct representation of the upper and lower sides of the tie-plate

sold by the Hart Steel Company to the Atchison, Topeka and Santa Fe Railroad and fabricated at the mill of the Elyria Iron and Steel Company?

Mr. Reed: Objected to as not rebuttal evidence.

A. It is a correct representation.

Q. 72. The defendant's witness, Willis McKee, in his answer to X Q. 52 has stated:

1344 "These plates were furnished by us to the Santa Fe Railroad in the fall and winter of 1908-9; the exact quantity I am not able to say. Although the original contract called for 5,000 tons, I believe we furnished somewhat in excess of this quantity."

State how many tie-plates of this pattern or design were purchased by the Santa Fe Railroad in the original order?

Mr. Reed: Objected to as not rebuttal evidence, irrelevant, incompetent and immaterial at the present stage of the case.

A. If I remember correctly I think the contract called for 5,000 tons.

Q. 73. Mr. McKee, in answer to X Q-. 53 and 54 has also testified that that contract was afterwards reduced to writing. That is a fact is it not?

Mr. Reed: Same objections.

A. It was.

Q. 74. Where is that contract?

Mr. Reed: Same objections.

A. In the vault of the Hart Steel Company, Elyria, Ohio.

Q. 75. And, as president of the Hart Steel Company, the contract is subject to your control, is it not?

Mr. Reed: Same objections.

A. I believe it is.

Q. 76. After filling the order of the Santa Fe Road called for by this original contract has the Elyria Iron and Steel Company, or the Hart Steel Company, sold any other tie-plates of the same pattern or design as those sold by the original contract to or on account of the Atchison, Topeka and Santa Fe Railroad?

Mr. Reed: Same objections and the witness is instructed in the opinion of counsel that he is under no obligations to answer
1345 the question unless he chooses to do so, and may therefore decline to answer the question until the court rules upon it.

A. On advice of counsel I decline to answer the question.

Q. 77. Will you swear that either the Elyria Iron and Steel Company, or the Hart Steel Company, has, since the filling of the order on this original contract with the Santa Fe Road, sold any similar tie-plates to or on account of the Santa Fe Road?

Mr. Reed: Same objections, same advice.

A. On advice of counsel I decline to answer the question.

Q. 78. You know it to be a fact, do you not, that neither of the companies named has sold to the Santa Fe Road any such tie-plates since the filling of the original contract?

Mr. Reed: Same objections, same advice.

A. On advice of counsel I decline to answer the question.

Q. 79. Have you any objection to producing the contract referred to, which you say was made between the Santa Fe Road and the Hart Steel Company respecting the first 5,000 tons referred to, in order that the complainant may show to the court the contractual relations between the Hart Steel Company and the Santa Fe Railroad and between that railroad and the Elyria Iron and Steel Company with respect to the subject of this litigation in which you are testifying as a witness?

Mr. Reed: Same objections, same advice.

A. On advice of counsel I decline to answer the question.

Q. 80. Is it not a fact that it is provided in that contract,
1346 directly or indirectly, that the Hart Steel Company, and the Elyria Iron and Steel Company, or both, were guaranteed immunity from costs or damages, in whole or in part, by the Santa Fe Railroad, or person or persons acting on account of said railroad and to be held harmless from expense that might grow out of any litigation, brought against either of said companies or both, for alleged infringement of any letters-patent by reason of such manufacture and sale to said Santa Fe System?

Mr. Reed: Same objections, also objection that the witness is called upon to state the alleged contents of an alleged contract; the same advice.

A. On advice of counsel I decline to answer the question.

Q. 81. Is it not a fact that the Santa Fe Railroad Company, or person acting for or on behalf of said company or system, has paid, in whole or in part, or has agreed to pay in whole or in part, the expenses of the defense in this litigation, or any judgment that may be entered against the defendants in this cause, or both?

Mr. Reed: Same objections, same advice.

A. On advice of counsel I decline to answer the question.

Q. 82. Is it not a fact that the Atchison, Topeka and Santa Fe Railroad, has provided the senior counsel in this cause, Mr. Frank F. Reed, and has and is control-ing the defense in this case?

Mr. Reed: Same objections, same advice.

A. On advice of counsel I decline to answer the question.

Q. 83. Is it not a fact that neither the Elyria Iron and Steel Company, nor the Hart Steel Company has paid, or agreed
1347 to pay, or has received any bill from the senior counsel, Mr. Frank F. Reed, for his services in connection with the defense in this cause?

Mr. Reed: Same objections, same advice.

A. On advice of counsel I decline to answer the question.

Q. 84. Is it not a fact that neither the Elyria Iron and Steel Company, or the Hart Steel Company, or any person acting for or on behalf of said companies, has retained Mr. Frank F. Reed as its counsel in this cause other than by suffering him to conduct the defense by reason of the agreement with the Santa Fe Railway System?

Mr. Reed: Same objections, also a special objection to the word "suffering"; same advice.

A. On advice of counsel I decline to answer the question.

Q. 85. You know, do you not, that the officials of the Santa Fe Railroad have stated openly that they were not only interested in this cause, but were conducting the defense?

Mr. Reed: Same objections; same advice.

A. On advice of counsel I decline to answer the question.

Q. 86. Have you not yourself stated to various persons that your company, meaning the Elyria Iron and Steel Company, or the Hart Steel Company, or both, was guaranteed against expense in this litigation?

Mr. Reed: Same objections; same advice.

A. On advice of counsel I decline to answer the question.

Q. 87. And have you not stated to various persons that your company, meaning the Elyria Iron and Steel Company and the Hart Steel Company, or both, would not have taken the
1348 order for the 5,000 tons from the Santa Fe Railroad unless you had been "fully protected"?

Mr. Reed: Same objections; same advice.

A. On advice of counsel I decline to answer the question.

Col. Brown: Complainant's counsel here states that he considers it of importance and germane to the issues of this cause that so much of the contractual relations as were entered into by the contract referred to by this witness between the Elyria Iron and Steel Company, or the Hart Steel Company, or persons acting for or on behalf of either of said companies, on the one hand, and the Atchison, Topeka and Santa Fe Railroad, or persons acting for or on behalf of said railroad company, on the other hand, and which directly or indirectly in said contract or by associated documents or writings, guaranteed, or was intended to guarantee the defendants or either of them in whole or in part, against any judgment or costs that might be entered in this cause, or guaranteeing the repayment in whole or in part, directly or indirectly, any of the expenses of the defendants, or either of them, incurred in the conduct of the defense of this cause including the furnishing of counsel, be shown to the court, in order that the court may understand and know who is conducting, controlling and directing the defense herein, and who is, therefore, an interested party.

For this reason complainant's counsel again calls upon the de-

fendant's counsel to produce for his inspection the contract or contracts, writings or associated documents, relating to the subject-matter herein inquired of for the purpose of having placed
1349 upon the record, either by direct reference to said contract, or by stipulation of counsel, the actual contractual relation of the Atchison, Topeka and Santa Fe Railroad with the defendant or defendants.

Defendant's counsel making no reply, an adjournment is now taken to the same place at 2 o'clock p. m., Tuesday, December 20, 1910.

B. C. MILLER,
Notary Public, Examiner.

CLEVELAND, OHIO, December 20, 1910.

Met pursuant to adjournment.

Present:

Charles C. Linthicum, Esq., and Col. Taylor E. Brown, on behalf of the complainant.

Frank F. Reed, Esq., and A. T. Hills, Esq,, on behalf of the defendants.

And thereupon the examination of the witness W. S. Miller is resumed by Mr. Brown.

Q. 88. Have you produced, in response to the request made during your examination yesterday and in obedience to the subpœna duces tecum that was served upon you yesterday, the contract or agreement between the Hart Steel Company and the Atchison, Topeka and Santa Fe Railroad regarding which you have testified?

Mr. Reed: Objected to as calling for evidence that is not rebuttal.

A. I have.

Q. 89. Please read the contract into the record or deliver it to the Examiner to be marked for identification and a correct copy made for purposes of the record?

Mr. Reed: In response to this request and in response to all the interrogatories that were propounded to the witness at the
1350 examination on December 19, 1910, relative to the connection or interest of the Atchison, Topeka and Santa Fe Railroad Company in this litigation and all the questions which the witness under advice of counsel declined to answer and in response to and satisfaction of the subpœna duces tecum served upon the witness, counsel for defendant produces and reads from the only contract or contracts between the Atchison, Topeka and Santa Fe Road and the defendants the Hart Steel Company and the Elyria Iron and Steel Company, or either of them, relating to the purchase of the 5,000 tons of tie-plates concerning which the witness was interrogated, the following clauses which are the only clauses in said contract or letters relating to the subject of guarantee or indemnity

for the manufacture and delivery of tie-plates contemplated in said contract on the part of the said railroad company.

The contract is in the form of a letter dated August 27, 1908, addressed by the Atchison, Topeka and Santa Fe Railroad Company to the Hart Steel Company at Chicago, Illinois, and signed by W. E. Hodges, General Purchasing Agent, and accepted, Hart Steel Company by W. S. Miller, President.

"Fourth. If style 'B' plate is ordered, you agree to protect us against any possible litigation from infringement of any existing patents. If style 'A' plate is to be furnished, we are to protect you against any litigation from possible infringement of patents."

In a letter dated Chicago, September 1, 1908, addressed to Mr. W. E. Hodges, Gen'l P. A., the A., T. & S. F. R. R. Co., Railway Exchange, Chicago, signed Hart Steel Company, per G. S. Wood, Sales Agent, acknowledging the receipt of the contract and
1351 returning the duplicate signed, occurs the following:

"In item marked '4th' referring to the style 'A' plate, we understand that the A. T. & S. F. Ry. Co. expect to protect us against any loss whatsoever that may be caused by reason of our rolling that particular style of plate and should any litigation arise we will expect your attorney to handle the suit under your direction."

The styles of plate referred to in the contract and letter are as follows: Style "A" plate is the plate that was actually manufactured and is identical with the plate shown in "Complainant's Exhibit No. 16, Photograph Defendant's Tie-plate." Style "A" is also shown in two views at the right-hand margin of "Complainant's Exhibits Nos. 19 and 20, Santa Fe Blue-Print of Tie-Plate 1908," and style "B" is shown in two views at the left-hand side of the same exhibits last referred to.

Mr. Frank F. Reed has been retained by the Atchison, Topeka and Santa Fe Railroad Company as counsel in these cases.

By stipulation the foregoing statement of Mr. Reed is accepted as full and complete answer to said questions and in lieu of the production of the contract.

By Col. Brown:

Q. 90. Please state the date of the organization of the Hart Steel Company?

A. September 23, 1903.

Q. 91. Since the adjournment yesterday have you examined the records of the Hart Steel Company and the Elyria Iron and Steel Company to prepare yourself to answer the questions regarding which you were interrogated yesterday, as to the several matters not covered by the foregoing stipulation?

1352 A. I have.

Mr. Reed: Counsel for defendant objects to each and all the interrogatories and answers relative to the matters propounded yesterday and about to be propounded to the witness as not proper rebuttal and for the sake of expediting the depositions this objection is preserved to each question and answer.

Q. 92. When did the Elyria Iron and Steel Company begin to roll tie-plates?

A. February, 1904.

Q. 93. And what kind or style of plate was first rolled?

A. The plate known as the "Hart" plate.

Q. 94. What was the date of the contract between the Hart Steel Company and Spencer Otis and Company and what was the date of its termination?

A. The Hart Steel Company entered into a contract with the Spencer Otis Company, December 4, 1903. This contract was terminated May 1, 1907.

Q. 95. Spencer Otis and Company made no sales of tie-plates for either of your companies prior to the making of this contract did they?

A. Not that I remember of.

Q. 96. State if you can the total sales of tie-plates in tons sold through Spencer Otis and Company up to the date of the termination of your contract with them, May 1, 1907?

A. 8,767 tons.

Q. 97. What territory was covered by the contract with Spencer Otis and Company?

A. The contract provides that two schedules should be attached and made a part thereof and these schedules are marked "List A" and "List B" and contained in these schedules are the several railroads which they were permitted to sell and would define the territory and covered the railroads located in the West, North-
1353 west, South and some East. I produce correct copies of Lists "A" and "B." List "B" covers roads assigned to the Republic Railway Appliance Company of St. Louis which was the St. Louis Branch of Spencer Otis and Company.

Mr. Brown: The lists produced by the witness are here marked for identification only as "Complainant's Exhibits Nos. 159 and 160," respectively.

(Witness continuing answer:) The clause in the contract covering territory is as follows:

"The Spencer Otis Company is hereby granted the exclusive privilege during the continuance of this contract, to solicit from the railroad companies, a list of which is hereto attached marked 'A' and 'B' and made part hereof, and any other railroad companies which the Hart Company may from time to time, in writing, designate to the Spencer Otis Company for that purpose, orders for tie-plates manufactured by the Hart Company."

Q. 98. What kind of tie-plates were sold through Spencer Otis and Company?

A. At first, malleable and Hart plates; afterwards, Hart, Servis and McKee plates.

Q. 99. The Hart, the Servis and the McKee plates were rolled steel plates were they not?

A. They were.

Q. 100. Can you state what proportion or what number of the

8,767 tons sold through Spencer Otis and Company were malleable as distinguished from rolled steel?

A. 130 tons were the malleable tie-plates.

Q. 101. And of the remainder how many were Servis plates, and how many were McKee plates?

A. 322 tons Servis plates; 1938 tons McKee plates.

Q. 102. Please give a list of the names of railroads to whom tie-plates were actually sold prior to May 1, 1907, under the Spencer Otis and Company contract?

1354 A. Grand Rapids and Indiana; Chicago, Northwestern; Denver and Rio Grande; Chicago, Rock Island & Pacific; Mill Valley & Mt. Tamalpais; San Pedro, Los Angeles and Salt Lake; Oregon Short Line; Manistique & Marquette; Illinois Central; Colorado Southern; Zenith Furnace Company; Chicago & Alton; Yazoo & Mississippi Valley; North Side Street Railway; International Construction Co.; Chicago & Eastern Illinois; S. F. Alden & Co.; C., B. & Q.; Kansas City, Mexico & Orient; United Rys. of San Francisco; Yosemite Valley; Oglesby & Granville; C., M. & St. P. Co.; California & Northwestern; E. & T. H.; San Jose and Santa Clara; Colorado Midland; The Arnold Co.; Galesburg & Kewanee Elec. Ry.; Great Western Ry. Co.; Conner Lumber & Land Co.; Lake Superior and Ishpeming; Western Pacific; Sacramento Gas, Electric & Ry. Co.; Bay Point & Clayton; Chicago & Great Western; Louisiana Central Construction Co.; Northwest States Portland Cement Co.

Q. 103. As I understand you, there were no sales of tie-plates made through Spencer Otis and Company after the date of the termination of their contract with you May 1, 1907, is that correct?

A. It is.

Q. 104. And prior to May 1, 1907, your company made no sales through Spencer Otis and Company to either of the following roads: Adirondack & St. Lawrence; New York, Ontario & Western; Atlantic Coast Line; Boston Elevated; Baltimore & Ohio; Coney Island & Brooklyn; Interboro Rapid Transit; Lake Erie and Western; Norfolk & Western; Virginia Railway; Western Maryland; Atchison, Topeka & Santa Fe; Arizona & New Mexico; Chicago & Oak Park Elevated; Calumet & Hecla Mining Company; Detroit, Toledo & Ironton; Gulf, Colorado & Santa Fe; Minneapolis & St.

1355 Louis; Metropolitan West Side Elevated; Superior & Southeastern; Terminal Railway Association of St. Louis; Utah Copper Company; and the Ann Arbor Railway, is that correct?

A. It is.

Q. 105. When were you elected president of the Hart Steel Company?

A. March, 1907.

Direct examination closed.

Cross-examination by Mr. Reed:

X Q. 106. Have you in this investigation ascertained the total sales of tie-plates made by the Elyria Iron and Steel Company up

to November, 1907, outside of sales through Spencer Otis and Company, if so state what it is?

Col. Brown: Objected to as irrelevant and immaterial.

A. The total sales for that period outside of Spencer Otis and Company were 27,628 tons.

X Q. 107. And have you investigated and can you state the output of the Elyria Iron & Steel Company in tons of tie-plates from March, 1904, to March, 1910, if so please state?

Col. Brown: Same objection.

A. The total tonnage shown by our books is 70,736 net tons.

X Q. 108. And have you investigated so that you can state the rolling capacity of the Elyria Iron & Steel Company of tie-plates of average sizes and thicknesses in November, 1907, both as to rolling and punching, if so please state?

Col. Brown: Same objection.

A. The rolling capacity on average sizes and thicknesses
1356 is about 160 tons per 24 hours, or about 45,000 tons per year. The punching capacity is approximately 100 tons per 24 hours, or about 33,000 tons per year.

X Q. 109. Since March, 1910, has there been any change in the rolling or punching capacity of the Elyria Iron & Steel Company, for tie-plates, if so please state?

A. The rolling capacity since March, 1910, on same size and thickness has increased by improved practice and organization. Since March, 1910, the punching capacity has increased from 25 to 30 per cent.

X Q. 110. Of tie-plates made by the Elyria Iron & Steel Company and sold through Spencer Otis & Company during their agency what quantity in tons was of the Hart style of plate?

A. 6,365 tons.

X Q. 111. And during this agency what other tonnage of tie-plates were sold other than the Hart, McKee, Servis and malleable and in what quantities?

A. A flat top and bottom plate, the quantity amounting to 10 tons.

X Q. 112. I believe the entire product in the way of tie-plates of the Elyria Iron & Steel Company has always been sold through the Hart Steel Company?

A. It has since the organization of that company.

Cross-examination closed.
Examination closed.

W. S. MILLER.

Col. Brown: Complainant's counsel here states that he will not examine H. B. Wick, or J. H. Barnard, witnesses subpœnaed in this cause and that the foregoing closes the proceedings under the present notice.

Adjourned subject to further notice.

B. C. MILLER, *Examiner.*

1357 & 1358 UNITED STATES OF AMERICA,
Northern District of Ohio, ss:

I, B. C. Miller, Standing Examiner for the United States Circuit Court, Northern District of Ohio, do hereby certify that the foregoing deposition of W. S. Miller, was taken before me pursuant to the annexed notice, at the office of the Clerk of the Circuit Court of the United States for the Northern District of Ohio, in the Federal Building, Cleveland, Ohio, beginning on Monday, December 12, 1910, and continuing until completed on Tuesday, December 20, 1910, as therein appears; that the deposition was taken on the part of the complainant to be used on the hearing of a certain cause now pending in the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois, in Chancery, No. 29,249, wherein The Railroad Supply Company is the complainant and The Hart Steel Company et al. the defendant; that the parties to said cause were present at the taking of the same, complainant by its counsel, Taylor E. Brown, Esq., and defendant, by its counsel, Frank F. Reed, Esq., and A. T. Hills, Esq., as therein appears; that before deposing, the said W. S. Miller, was by me duly cautioned and sworn to testify the truth, the whole truth and nothing but the truth in the cause aforesaid; and that said depositions were reduced to writing on the typewriting machine by a skillful operator agreed to by the parties, from statements of the said W. S. Miller, and the same were duly subscribed to by the said witness in the presence of counsel and before me.

And I do further certify that I am neither attorney nor of counsel for any of the parties to the above entitled cause, nor related by blood or marriage to either of said parties or to said counsel, and am not interested in the result of said cause.

I do further certify that the foregoing is a true record of the depositions taken and of the proceedings had before me pursuant to the notice aforesaid, between the dates mentioned.

All exhibits offered in this deposition, have been retained by counsel, pursuant to stipulation heretofore made.

In witness whereof, I have hereto set my hand this 21st day of December, A. D. 1910.

B. C. MILLER,
Standing Examiner.

1359 In the United States Circuit Court for the Eastern Divison of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

CHICAGO, ILLINOIS, December 23, 1910.

The following proceedings were had before me, G. R. Wilkins, notary public, in and for Cook County, Illinois, pursuant to agree-

ment of counsel, at the offices of Messrs. Poole & Brown, 808 Marquette Building, Chicago, Illinois, beginning at 10 o'clock a. m.

Present:

Col. Taylor E. Brown, on behalf of the complainant.
Frank F. Reed, Esq., on behalf of the defendant.

And thereupon, TORRIS H. ALFREDS, a witness produced on behalf of the complainant, having been first duly cautioned and sworn, testifies in answer to interrogatories propounded by Col. Brown, as follows:

Q. 1. Please state your name, age, residence and occupation.

A. Torris H. Alfreds. I am 28 years of age, and reside at
1360 No. 2528 North Talman avenue, Chicago, Illinois. Draftsman.

Q. 2. I show you a model made in wood and ask you to state what it is?

A. This is a wooden model made to represent the rail-joint of the Fisher patent, No. 360,673, dated April 5, 1887. The model is made from pencil drawings which I made from the drawings of the said Fisher patent and in the making of these pencil drawings I adopted a scale different from that of the patent drawings. I made the rail base five inches in width, and I made the height and other dimensions of the rail proportionate to the base and in accordance with the standard of the American Society of Civil Engineers. Having thus determined the size of the rail, I made all the other measurements of the pencil drawing to correspond to the enlargement over the patent drawings.

The two rails shown in this wooden model are full size of the pencil rail drawings, that is, they have a 5-inch base. The sole or base of the Fisher chair or rail-joint to which the rails are fastened in this model rests upon two boxes rectangular in cross-section, which two boxes represent or correspond with the illustration of the ties F F in the Fisher patent, and they are fastened to a base-plate or board merely as a matter of convenience in holding them together. With the foregoing explanation it is clear that the wooden model correctly represents on an enlarged scale the rail-joint and chair of the Fisher patent No. 360,673.

Q. 3. Please look at the model which I now show you and state what that is.

A. This is a model made in wood to represent the track fastening device of the Tillinghast patent, No. 584,248, dated June 8, 1897.
The model is made from an enlarged drawing that I made
1361 from the patent drawing and represents in the rectangular-shaped box or base one of the ties upon which is placed the channeled bar corresponding to the plate 10 of the patent having a transverse recess in its edges for the reception of the rail and provided with the L-shaped clamps shown in Fig. 6 of the patent to clamp the rail in place. As in the case of the model just referred to, the scale on which this model is built is based upon the same size rail, namely,

one with a 5-inch base and the model as a whole correctly represents the device, of the Tillinghast patent, No. 584,248.

Q. 4. Please look at the wooden model which I now show you and state what it is.

A. This is a model made in wood to illustrate the railroad-chair and rail-coupling device illustrated in the patent to Wootten No. 66,437, patented July 2, 1867.

In making this model I first prepared a working drawing in pencil which I made on a scale larger than that of the patent drawings, namely, one having a 5-inch base for the rail. The model shows the chair coupling, the ends of two rails resting in the chair and the chair resting upon two boxes to represent the ties D D of the Wootten patent, which ties are provided with grooves as shown in the patent to accommoduate the ends of the rib or girder *b* of the patent. In order to hold the boxes representing the ties together conveniently for handling I have had them secured to a base-board which latter, of course, is not shown in the Wootten patent.

The spikes and the bolts and nuts in each of the three models are of metal, and this model represents correctly the device of the Wootten patent No. 66,437.

Q. 5. Please look at the model which I now show you and state what it is.

A. This is a model made in wood and metal of the patent to Hudson, No. 42,020, of August 13, 1873, for Improvement
1362 in Railway Rail Joints. In making this model I departed slightly from the dimensions of the Patent Office drawings, making the base of the rail 4¾ inches in width. The under part of this model is the rail-chair proper corresponding to the part D of the patent and is enlarged five times from the patent drawings and this enlargement determined the width of the base of the rail and the other dimensions of the model. The joint plates are made of brass and the model as a whole correctly represents the device of the Hudson patent No. 142,020.

Q. 6. Please look at the model which I now show you and state what it is.

A. This is a model in wood of the Thompson & Race "Rail Chair" patent, No. 305,864, dated September 30, 1884. It is a little over twice as large as the Patent Office drawing, having been made so that the rail is 5 inches in height and the other parts of the model corresponding in dimensions. It correctly represents the Thompson & Race patent device.

Q. 7. Please look at the model which I now show you and state what it is?

A. It is a wooden model with metal bolt, nut and washer of the device shown in a blue-print marked "Defendant's Exhibit AA, Railroad Gazette, Vol. 22, June 6, 1890, P. 399." The blue-print is also marked "drawing one and one-half size."

This model is enlarged from the scale of the blue-print drawing, the rail having a five-inch base, and the other parts of the model of corresponding scale, and makes the model between 2½ and 3 times larger than the defendant's Exhibit AA Blue-Print. The model,

however, correctly represents the device shown in the Exhibit Blue-Print.

Col. Brown: Complainant's counsel now introduces in evi-
1363 dence as exhibits the six wooden models identified by the witness.

The Fisher model of patent No. 360,673, defendant's Exhibits S^{10}, to be marked and identified in this case as "Complainant's Exhibit No. 153, Fisher Rail-Joint Chair, G. R. Wilkins, Notary Public."

The Tillinghast model of patent No. 584,248, defendant's Exhibit S^{50}, to be marked and identified with this case as "Complainant's Exhibit No. 154, Tillinghast Track Fastening, G. R. Wilkins, Notary Public."

The Wootten chair rail model of patent No. 68,437 Defendant's Exhibit S, to be marked and identified as "Complainant's Exhibit No. 155, Wootten Rail Chair, G. R. Wilkins, Notary Public."

The model of the Hudson patent No. 142,020, Defendant's Exhibit S^{67}, to be marked and identified as "Complainant's Exhibit No. 156, Hudson Railway Rail Joint, G. R. Wilkins, Notary Public."

The model of the Thompson & Race patent No. 305,864, to be marked and identified as follows: "Complainant's Exhibit No. 157, Model of Complainant's Cross-exhibit No. 2, Thompson & Race Old Rail Chair, G. R. Wilkins, Notary Public."

The model of Defendant's Blue-Print of Railway Gazette Device to be marked and identified as "Complainant's Exhibit No. 158, Model of Defendant's Exhibit AA, Illustration Railroad Gazette, Vol. 22, June 6, 1890, G. R. Wilkins, Notary Public."

Mr. Reed: The models identified by the witness and offered in evidence are each objected to as incompetent, irrelevant and immaterial and not proper rebuttal evidence; and the deposition of the witness is objected to for the same reason.

Direct examination closed.
1364 Cross-examination waived.
Examination closed.

TORRIS H. ALFREDS.

Adjourned subject to agreement of counsel.

G. R. WILKINS,
Notary Public.

UNITED STATES OF AMERICA,
State of Illinois, County of Cook, ss:

I, G. R. Wilkins, a notary public, in and for the County of Cook, and State of Illinois, do hereby certify that the foregoing deposition of Torris H. Alfreds, was taken before me pursuant to agreement of counsel, at the offices of Messrs. Poole & Brown, 808 Marquette Building, on Friday, December 23, 1910, as therein appears; that the deposition was taken on the part of the complainant to be used on the hearing of a certain cause now pending in the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois, in Chancery, No. 29,294, wherein the Railroad Supply

Company is the complainant and The Hart Steel Company and Guilford S. Wood, the defendants, that the parties to said cause were present at the taking of the same, complainant by its counsel, Col. Taylor, E. Brown, and defendants by their counsel, Frank F. Reed, Esq., as therein appears; that before deposing the said Torris T. Alfreds was by me duly cautioned and sworn to testify to the truth, the whole truth and nothing but the truth in the cause aforesaid; and that said deposition was reduced to writing on the type-writing machine by me from statements of the said Torris H. Alfreds, and the same was duly subscribed to by the said witness in the present of counsel and before me.

And I do further certify that I am neither attorney nor of counsel for any of the parties to the above entitled cause, nor related by blood or marriage to either of said parties or to said counsel, and am nowise interested in the result of said cause.

1365 I further certify that my fees as notary public, and for typewriting, amounting to $16.40, have been paid by the complainant.

I do further certify that the foregoing is a true record of the deposition taken and of the proceedings had before me, pursuant to the agreement of counsel as aforesaid, on the date mentioned.

In witness whereof, I have hereto set my hand and affixed my notarial seal, this 23d day of December, A. D. 1910.

G. R. WILKINS,
Notary Public.

1366 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

CHICAGO, ILL., February 8, 1911.

Met pursuant to verbal notice and agreement before me, G. R. Wilkins, notary public and acting by consent as special examiner, at the offices of Poole & Brown, 808 Marquette building, Chicago, Illinois, at 10 o'clock, a. m.

Present:

Col. Taylor E. Brown, on behalf of the complainant.
Frank F. Reed, Esq., on behalf of the defendant.

Stipulation.

At the request of counsel for complainant, it is hereby stipulated and admitted by counsel for defendants that if J. E. Bennky was

called, duly sworn and examined as a witness in this cause he would testify as follows:

That he is the Chief Examiner in charge of track construction and maintenance of way of The Netherlands State Railways with his office in Utrecht, Holland; that he is familiar with the roadway and track devices used on said railway; that he is familiar with
1367 the toothed plate shown by the late J. W. Post in Fig. 9 of Glaser's Annalen 1887, Volume XXI, p. 43; that toothed plates like that shown in said Fig. 9 but without the weight saving cavities (*a*), have been used in track on said Netherlands State Railway; and that on January 10, 1911, after careful investigation of the subject he wrote the following letter, to-wit:

Gesellschaft fur den [illegible]
von
Niederlandischen Staats-Eisenbahnen.

UTRECHT, 10 Januar 1910.

Bahn und Bauten
No. 894 B. B. 27
Anlage

N B. Es wird ersucht, in de Antwort Nummer und Datum dieses Briefes anzugeben und die Antwort an obenstehende Adresse ohne Beifugung des Namens einer person zu richten.

Telegramm-adresse:
Staatsspoorweg Utrecht.

BETRIFFT

Antwort aug Schreiben
vom 10 Dez. 1910.

Ich teile Ihnen ergebenst mit dass die in Glaser's Annalen 1887, Band XXI seite 43 figur 9 dargestellte Zahnplatte von unserer Gesellschaft ausgeführt ist ohne die *Aussparungen a.*
Herr J. W. Post ist im Jahre 1904 gestorben

Hochachtungsvoll
Der Ober - Bahningenieur
(Unterschrift)
J. E. Bennky.

Herrn Franz Reinhold
Patentanwalt
Berlin.

Franz Reinhold.

1368 It is further stipulated that if Franz Reinhold were called, duly sworn and examined as a witness, in this cause, he would testify in substance as follows:

That he is a patent attorney residing in Berlin, Germany, and that

on January 11, 1911, he received a letter dated January 10, 1911 from J. E. Bennky, Chief Engineer of the Netherlands Railway Company which he immediately sent to Messrs. Poole & Brown, Chicago, Illinois, with a letter of transmittal, reading as follows, to-wit:

FRANZ REINHOLD
Patentanwalt.

BERLIN S. 61, January 11, 1911.

Telegramm-Adresse:
Patentanwalt Reinhold,
Berlin

Blucherstr. 36.

Fernsprecher: Amt. IV, 13 908.
Messrs. Poole & Brown,
Marquette Building,,
Chicago, Ill.

Gentleman:

Re: J. W. Post, Devices Used in Railway Construction, published in Annalen fur Gewerbe und Bauwesen, 1887. After various efforts I have at last been able to get some information regarding the question referred to in your letter dated November 26th, 1910. As reported before, I have written to Mr. Post personally. But the letter could not be delivered by the Post Office, and was returned. At the same time I had written to the Netherlands Railway Company. As I did not at first receive any reply at all, I tried to trace Mr. Post in the later volumes of the Annalen fur Gewerbe und Bauwesen. But the latest reference has been found in the volume of 1889. I have also written to an attorney in Utrecht to find out the address of Mr. Post, and I am now awaiting the reply. To-day I am in receipt of the enclosed letter of the Netherlands Railway Company, which seems to settle the whole matter. I herewith give you a translation of the letter:

1369 I beg to inform you that the tooth plate shown in Fig. 9 of Glaser's Annalen, 1887, Volume XXI, page 43, has been used by our Company, but without the cavities *a*. Mr. J. W. Post died in 1904.

Very truly yours,

FRANZ REINHOLD.

No Charge.

It is further stipulated and agreed by and between counsel that the foregoing stipulations and statements shall be received in evidence in this cause with the same force and effect as though said Bennky and said Reinhold had given their depositions in the usual manner, and had made the said statements on the witness-stand under oath, subject to the undermentioned objections, cross-examination being waived, to-wit:

Mr. Reed: Defendant's counsel objects to the foregoing depositions as irrelevant and immaterial, and as not proper rebuttal evidence.

Stipulation.

At the request of counsel for complainant and in order to save time and expense as well as inconvenience to the proposed witness, it is admitted and stipulated by and between counsel for the respective parties, that between the 4th day of December, 1908, and the 1st day of February, 1911, the Atchison, Topeka and Santa Fe Railway (sometimes referred to in this record as the Santa System or the Santa Fe) has contracted for, purchased and ordered for use in its tracks, tie-plates in all respects like "Complainant's Exhibit No. 15, Defendant's Infringing Tie-Plate," illustrated in "Complainant's Exhibit No. 16, Photograph Defendant's Tie-Plate," and also as shown in the right-hand section of the blue-print of the said Railroad offered in evidence herein as "Complainant's Exhibit No. 19, Santa Fe Blue-Print of Tie-Plate 1908," substantially as follows, to-wit:

1370

Date of contract or number of order.	Amount of contract in tons.	Number of plates ordered.	Number of plates received.	Weight in pounds of plates received.	Weight in tons of plates rec.
Dec. 14, 1908..	10,000	2,756,611	2,756,611	21,891,230	
Mar. 4, 1909..	5,000	1,220,750	1,220,750	10,148,920	
Mar. 11, 1909..	5,000	1,257,813	1,257,813	10,065,405	
June 25, 1909	15,000 to 25,000	5,974,136	5,974,136	46,690,947	
Aug. 30, 1909..	37,500	10,169,312	10,169,312	79,454,571	
Order No. 6437, Nov. 23, 1910..	.....	6,710	6,710	57,645	
Total weight	of plates	received in	pounds...	168,308,718	
" "	" "	" "	tons.....	84,154	
Order No. 6438, Nov. 11, 1910..	.....	5,000	not yet	received.	
No. 6459, Dec. 13, 1910..	.....	8,000	not yet	received.	
Contract, Jan. 9, 1911..	4,000	.....	not yet	received.	

And that the complainant has sold and delivered to the said Atchison, Topeka and Santa Fe Railroad the said tie-plates in number and tonnage as stated and has contracted for to sell and accepted orders for sale and delivery the additional 4,000 tons and additional 13,000 tie-plates set out in the above tabulated statement.

It is further stipulated and agreed that the foregoing stipulation may be received and treated as evidence herein with the same force and effect as though an officer of the said Santa Fe Railroad or an officer of the complainant, having access to books and records and having knowledge of the facts, had been called and duly sworn as a witness in this cause and had made and testified to the truth of the

several statements contained in the foregoing stipulations, subject to the following objections of defendant's counsel.

Mr. Reed: Defendant's counsel objects to the facts just
1371 introduced in evidence by stipulation upon the ground that they are irrelevant and immaterial, and not proper rebuttal evidence.

And thereupon an adjournment was taken to Friday, February 10, 1911, at 2:30 o'clock, p. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILLINOIS, February 10, 1911.

Met pursuant to adjournment.
Present: Counsel as before.

WILLARD A. SMITH, a witness produced on behalf of the complainant, having been first duly cautioned and sworn upon oath, testifies in answer to interrogatories propounded by Col. Brown, as follows:

Q. 1. Please state your name, age, residence and occupation.

A. Willard A. Smith; 61; Chicago, Illinois; proprietor and editor of The Railway and Engineering Review.

Q. 2. Please state the nature of this publication.

A. Devoted to everything relating to railways, published every Saturday, and now in its forty-first year.

Q. 3. Please look at the Railway and Engineering Review of the issue dated December 3, 1910, and state whether or not this is one of the issues of the publication that you have just mentioned.

A. It is.

Q. 4. And please look at the Railway and Engineering Review of the issue of January 7, 1911, and state whether this is one of the issues of the publication that you have referred to.

1372 A. It is.

Q. 5. State whether or not these two issues were put out in the usual manner in the regular course on the dates respectively stated, to-wit, on December 3, 1910, and January 7, 1911.

A. They were.

Col. Brown: Complainant's counsel requests the notary to mark for identification only the two copies of the Railway and Engineering Review identified by the witness; and offers in evidence as an exhibit so much of the issue of December 3, 1910, as is found on pages 1112 and 1113 of the editorial entitled "Tie-Plates and the Rotting of Timber," the same to be marked as "Complainant's Exhibit No. 161, Editorial, Railway and Engineering Review of December 3, 1910, G. R. Wilkins, Notary Public, 2/10/1911" and further offers in evidence so much of the issue of January 7, 1911, as appears on pages 3 and 4 of that issue containing a communication from G. W. Merrell, Asst. to Genl. Manager, Norfolk & Western Ry., entitled "Tie plates and the Rotting of Timber" and the communication of F. C. Stowell, Boston, Mass., the same to be marked "Complainant's

Exhibit No. 162, Merrell and Stowell Communication to R. & E. Review, G. R. Wilkins, Notary Public, 2/10/1911."

Mr. Reed: Said articles and each of them are objected to as irrelevant, incompetent and immaterial, as unsworn statements, as an attempt to introduce expert evidence without qualifying or showing the experience or qualifications of the witness, as self serving declarations, as statements occurring subsequent to the institution of the suit, and as not proper rebuttal.

1373 Q. 6. Please state how the communication over the name, G. W. Merrell, and over F. G. Stowell, respectively, came to be published in your issue of January 7, 1911?

Mr. Reed: Objected to as irrelevant, incompetent and immaterial and as not proper rebuttal.

A. They were voluntary and unsolicited communications sent in by the respective writers as is very usual in connection with any editorials giving expression to opinion or experience.

Q. 7. And by whom was the editorial of the issue of December 3, 1910, written?

Mr. Reed: Same objection.

A. By Walter M. Camp, Engineering Editor of the Railway and Engineering Review.

Q. 8. Is this Mr. Camp the same person who is the author of a work entitled "Notes on Track" and if so, state the nature of that work and its standing?

Mr. Reed: Same objection.

A. Notes on Track is the most elaborate publication on the subject in the world, has been adopted as standard by most of the leading technical schools of this country and Europe. Mr. Camp is the author, and is generally regarded as an authority.

Q. 9. State if you know who F. C. Stowell of Boston, Massachusetts is who wrote the article that appears in your issue of January 7, 1911?

Mr. Reed: Same objection.

A. Mr. Stowell is a civil engineer, now in consulting practice, but formerly for many years in railroad service.

Q. 10. You may state, Mr. Smith, whether or not you had any official connection with the Louisiana Purchase Exposition, held in St. Louis, Missouri, in the year 1904, and if so, what?

1374 A. I was chief of the department of transportation exhibits, in which were included all exhibits relating to railways and all other forms of transportation.

Q. 11. Do you know whether or not the complainant, The Railroad Supply Company, had an exhibit of Wolhaupter tie-plates at that exposition?

Mr. Reed: Objected to as immaterial, irrelevant and incompetent, and not rebuttal.

A. It did.

Q. 12. Do you know whether or not the Railroad Supply Company received any award at that exposition for its exhibit of Wolhaupter tie-plates and if so what award?

Mr. Reed: Same objections and each of them, also as secondary proof.

A. It received the award of the grade of Gold Medal, the highest award which could be made under the rules of the exposition to the exhibit of any single device.

Q. 13. Please state the method employed by the officials directing this exposition in making awards?

Mr. Reed: Objections repeated.

A. All awards were made by an international jury of experts. The members of the jury were appointed by the President of the Exposition on the nomination of the chief of each department and were paid for their services by the exposition company. Each nation having exhibits in any department was entitled to a representation on the jury by members delegated by its own government. There were three classes of juries. The exhibits were examined first by the largest body known as the Class Jury. These were afterwards revised by a smaller jury known as the Group Jury. These subsequently went to the Superior Jury consisting of officers of the exposi-
1375 tion and the commissioners general of foreign countries who heard appeals and passed upon various awards with a view of equalizing them and securing justice as between the different countries. The awards as finally approved by the Superior Jury, were made by the exposition which issued diplomas in accordance therewith.

Q. 14. State whether or not you personally had anything to do with the jury in your department?

Mr. Reed: Same objection.

A. I selected all the American jurors, was myself a member of each of the three juries, and supervised the work and records of the jury in the transportation department.

Q. 15. Please give the name of the class jurors that had to do with the exhibit of the Wolhaupter tie-plates by the Railroad Supply Company?

Mr. Reed: Same objection.

A. The Class Jurors for all track material and appliances were as follows: J. W. Kendrick, Vice-President Atchison, Topeka & Santa Fe Railway; J. B. Barry, Chief Engineer Union Pacific Railroad; Walter G. Berg, Chief Engineer Lehigh Valley Railroad; B. A. Worthington, Ass't Director Maintenance and Operation, Harriman Lines; J. W. Thomas, Jr., Vice-President and General Manager, Nashville, Chattanooga & St. Louis Railroad; W. MacC. Grafton, Engineer of Signals, Pennsylvania Line; R. H. Phillips, C. E., St. Louis, Missouri, and Williard A. Smith, ex-officio.

UNITED·STATES·OF·AMERICA
UNIVERSAL·EXPOSITION·SAINT·LOUIS·MDCCCCIV
COMMEMORATING·THE·ACQUISITION·OF·THE·LOUISIANA·TERRITORY
THE·INTERNATIONAL·JURY·OF·AWARDS·HAS·CONFERRED·A
GOLD·MEDAL
UPON
THE RAILROAD SUPPLY COMPANY
TIE PLATES·CROSSING ALARM·BLOCK SIGNALS AND RAILWAY SUPPLIES

Q. 16. And the titles that you have given to these jurors indicate the positions, I take it, that they occupied at that time.

Mr. Reed: Same objections.

A. They do.

Q. 17. I understood you to say that the grade of Gold
1376 Medal was the highest award that could be made under the rules of the exposition to the exhibit of any single device, and that such an award was made to The Railroad Supply Company, is that correct?

Mr. Reed: Some objections. . .

A. It is true.

Q. 18. Do you know whether or not any other exhibitor of tie-plates received a similar award at the St. Louis Exposition referred to?

Mr. Reed: Same objections.

A. They did not.

Q. 19. Please look at the document which I now show to you and state if you know what it is and whose signatures appear thereon?

Mr. Reed: Same objections.

A. It is a diploma of the International Jury of Awards of the Universal Exposition, St. Louis, 1904, conferring a Gold Medal upon The Railroad Supply Company for tie-plates, crossing alarm, block signals and railway supplies. It is signed by the President of the Louisiana Purchase Exposition Company, David R. Francis; the Secretary of said Company, Walter B. Stevens; the Director of Exhibits, F. J. B. Skiff, and the Chief of the Department of Transportation, Willard A. Smith.

Q. 20. And is this your signature or fac simile thereof?

Mr. Reed: Same objections.

A. The signatures are all fac similes.

Col. Brown: The diploma identified by the witness is offered in evidence as an exhibit and marked "Complainant's Exhibit No. 163, Diploma St. Louis Exposition, G. R. Wilkins, Notary Public, 2/10/1911."

(Here follows diploma marked pages 1377 and 1378.)

1379 Mr. Reed: Objected to on the same grounds.

Direct examination closed.

Cross-examination by Mr. Reed:

X Q. 21. This diploma was for general merit in the entire exhibit of The Railroad Supply Company was it not?

A. For general merit of the entire exhibit and specific merit for each article mentioned.

X Q. 22. That is, for general merit in tie-plates, crossing alarm and block signals, and railway supplies?

A. The rule of the jury of awards was that an award granted to any exhibit covered each specific article in said exhibit alike, all getting the same award.

X Q. 23. And this diploma gave the Railroad Supply Company the privilege of purchasing a gold medal with the award indicated on it, I understand?

A. Yes.

Cross-examination closed.

Redirect examination by Col. Brown:

R. D. Q. 24. Do I understand by your answer to X Q. 22 in connection with this diploma and the rule you have stated that the effect of this diploma is that a gold medal is awarded to the Railroad Supply Company for its tie-plates, the grade of gold medal is also awarded for its crossing alarm and block signal exhibit, and that a grade of gold medal was similarly awarded for its exhibit of railway supplies?

A. That is correct.

Redirect examination closed.

1380 Recross-examination by Mr. Reed:

R. X Q. 25. Then the Railroad Supply Company could have invested its funds in three different gold medals, could it?

A. If it chose. These were not purchased of the Exposition Company, as the exposition issued only diplomas, and these were protected by the laws of the United States against counterfeiting or the unauthorized issue of medals.

Examination closed.

WILLARD A. SMITH.

Col. Brown: Complainant's counsel now offers in evidence as an exhibit a full sized commercial rail-joint known as the "continuous joint" for an 80 pound rail, with the abutting ends of two 80-pound rails bolted thereto, and the same is marked "Complainant's Exhibit No. 164, Continuous Rail Joint, G. R. Wilkins, 2/10/1911."

Mr. Reed: Objected to as irrelevant, immaterial, incompetent and as not rebuttal.

Col. Brown: Complainant's counsel now offers in evidence as an exhibit a full sized commercial rail-joint known as the "Weber Rail-Joint" for 70-pound rail, with the abutting ends of two 70-pound rails bolted thereto, and the same is marked "Complainant's Exhibit No. 165, Weber Rail Joint, G. R. Wilkins, Notary Public, 2/10/1911."

Mr. Reed: Same objections.

Col. Brown: Complainant's counsel now offers in evidence as an exhibit a full sized commercial rail joint known as the "Wolhaupter Rail Joint" for 75 pound rail, with the abutting ends of two 75 pound rails bolted thereto, and the same is marked "Complainant's Exhibit No. 166, Wolhaupter Rail Joint, G. R. Wilkins, Notary Public, 2/10/1911."

1381 Mr. Reed: Same objections.

Col. Brown: Complainant's counsel now offers in evidence as an exhibit an aluminum model illustrating the conception of Defendant's witness, Faulkner, of the rail-joint or chair shown in the letters-patent to Wells, No. 203,570 of May 14, 1878, and the same is marked "Complainant's Exhibit No. 167, Model Wells Rail Chair, G. R. Wilkins, 2/10/1911."

And thereupon an adjournment was taken to Monday, February 13, 1911, at 2:30 o'clock, p. m.

G. R. WILKINS,
Notary Public.

CHICAGO, ILL., February 13, 1911.

Met pursuant to adjournment.
Present: Counsel as before.

And thereupon an adjournment was taken to Tuesday, February 28, 1911, at 10 o'clock in the forenoon.

G. R. WILKINS,
Notary Public.

CHICAGO, ILL., February 13, 1911.

Met pursuant to adjournment.
Present: Counsel as before.

Stipulation.

It is hereby stipulated by and between counsel that if Hiram M. Buck of New York City, N. Y., a witness previously called by the complainant, should be recalled, duly sworn and examined as a witness, he would identify the five photographs produced at the examination of the witness Charles R. Miller, and duly marked
1382 for identification only, as photographs taken by said Hiram M. Buck, during the year 1910 and subsequent to the date of his previous examination in May, 1910, one of said photographs being taken at the Lowell Station, Massachusetts, of the Boston & Maine Railway, and four of said photographs being taken at the

Lynn Station, Massachusetts, of said Boston & Maine Railway, and that said photographs represent the condition of the track and parts shown in the photographs at the time the said photographs were taken; that the foregoing stipulation and statement be received in evidence in this cause with the same force and effect as though said Buck had been examined and testified in the usual manner and had made the foregoing statements and that the photographs be received in evidence on behalf of the complainant without further identification subject to the undermentioned objections by defendants' counsel.

Col. Brown: Complainant's counsel here offers in evidence the five photographs heretofore marked in evidence at the end of the answer to Q. 18 of the deposition of the witness, Miller, and which are referred to in the foregoing stipulation and the same are marked as "Complainant's Exhibit No. 168, Buck Inspection Photograph Boston & Maine Railroad, Lowell, Massachusetts, G. R. Wilkins, Notary Public, 2/28/1911," and "Complainant's Exhibits Nos. 169, 170, 171 and 172, Buck Inspection Photographs, Boston & Maine Railroad, Lynn Station, Massachusetts, G. R. Wilkins, Notary Public, 2/28/1911."

Mr. Reed: Defendants' counsel objects to the deposition of said Buck and to the five photographs offered as Exhibits Nos. 168 to 172, inclusive, as irrelevant and incompetent, and not proper rebuttal evidence.

(Here follow diagrams marked pages 1383 to 1392.)

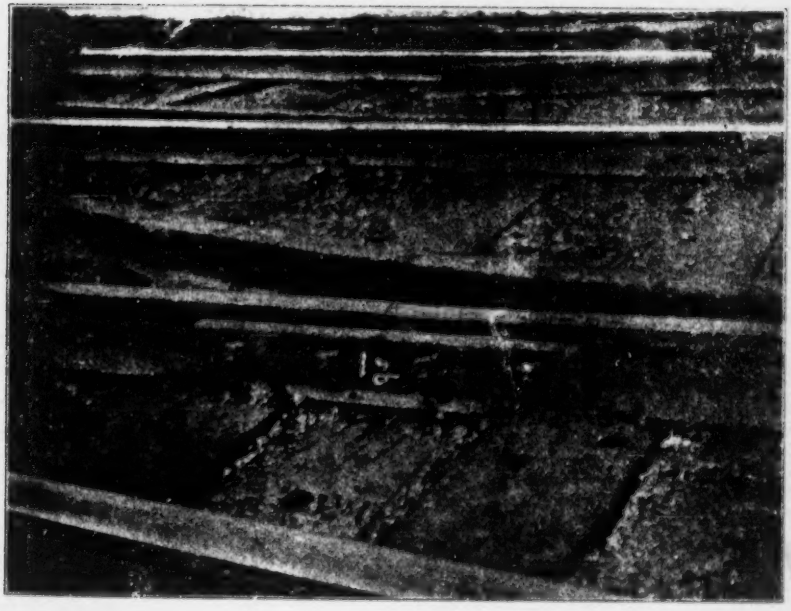
IN THE UNITED STATES CIRCUIT COURT
EASTERN DIVISION, NORTHERN DISTRICT OF ILLINOIS.
--oo--
The Railroad Supply Co.
vs.
Hart Steel Company and
Guilford S. Wood
No. 29,204.

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF OHIO.
--oo--
The Railroad Supply Co.
vs.
The Elyria Iron and
Steel Company
No. 7,668

"Complainant's Exhibit No. 168, Rack Inspection Photograph
Boston & Maine Railroad, Lowell, Massachusetts."

2/22/1911.

Notary Public.



IN THE UNITED STATES CIRCUIT COURT
EASTERN DIVISION, NORTHERN DIS-
TRICT OF ILLINOIS.

The Railroad Supply Co.
vs.
Hart Steel Company and
Guilford S. Wood

No. 89,894.

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF OHIO.

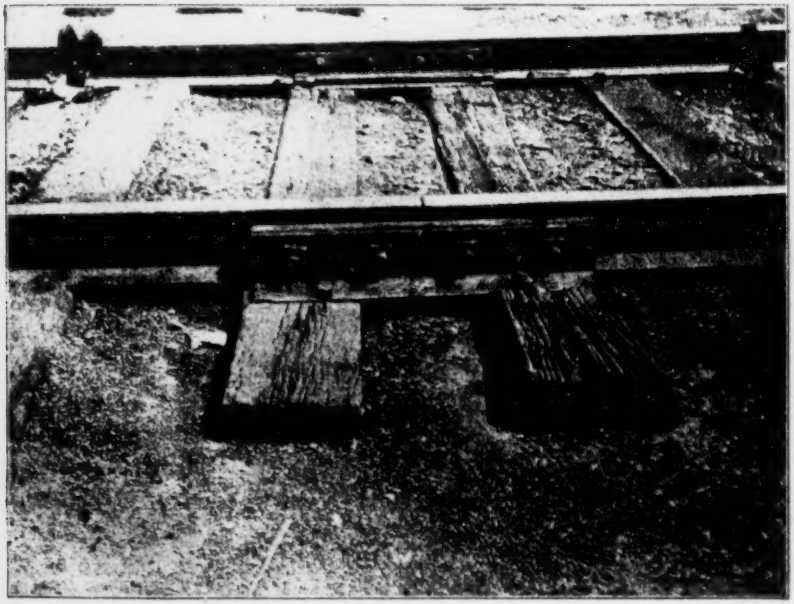
The Railroad Supply Co.
vs.
The Elyria Iron and
Steel Company

No. 7,868

*Complainant's Exhibit No. 180. Buck Inspection Photograph, Boston & Maine Railroad, Lynn Station, Massachusetts.

9/26/1911.

Notary Public.



IN THE UNITED STATES CIRCUIT COURT
EASTERN DIVISION, NORTHERN DISTRICT OF ILLINOIS.

The Railroad Supply Co.,
vs.
Hart Steel Company and
Guilford S. Wood

No. 29,294.

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

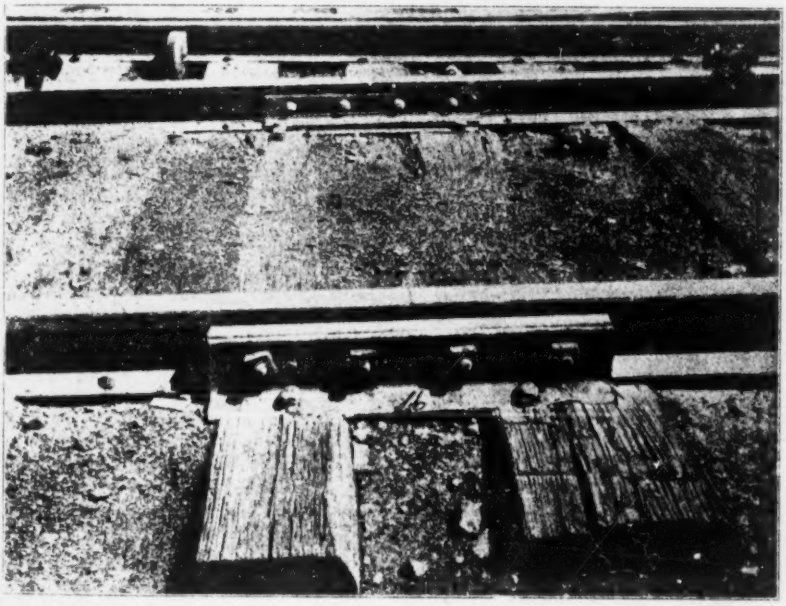
The Railroad Supply Co.,
vs.
The Elyria Iron and Steel Company

No. 7,680

"Complainant's Exhibit No. 170, Buck Inspection Photograph, Boston & Maine Railroad, Lynn Station, Massachusetts."

3/20/1911.

Notary Public.



IN THE UNITED STATES CIRCUIT COURT
EASTERN DIVISION, NORTHERN DISTRICT OF ILLINOIS.

The Railroad Supply Co.,
vs. } No. 28,894.
Hart Steel Company and
Guilford S. Wood

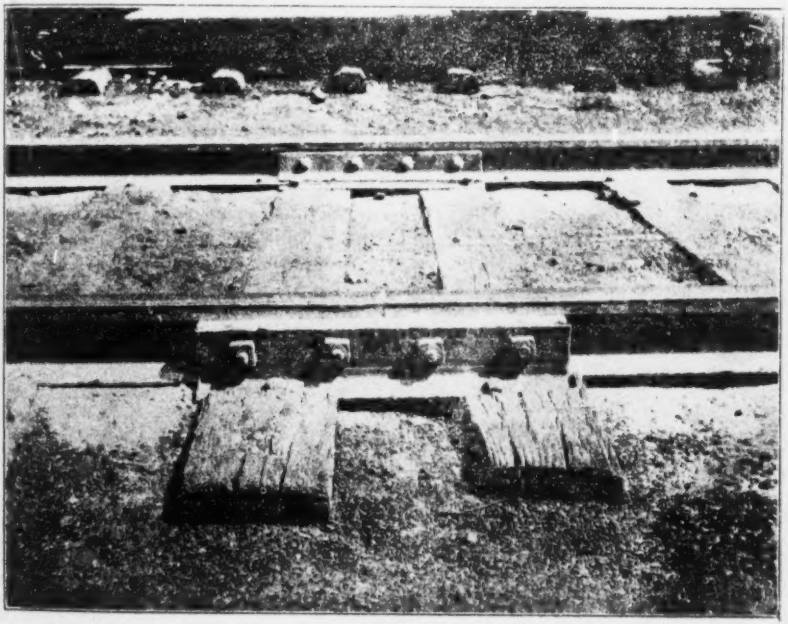
IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

The Railroad Supply Co.,
vs. } No. 7,000
The Elyria Iron and Steel Company

"Complainant's Exhibit No. 171, Buck Inspection Photograph, Boston & Maine Railroad, Lynn Station, Massachusetts."

E/28/1911.

Notary Public.



IN THE UNITED STATES CIRCUIT COURT
EASTERN DIVISION, NORTHERN DISTRICT OF ILLINOIS.

The Railroad Supply Co.
vs.
Hart Steel Company and
Guilford S. Wood

No. 20,894.

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE NORTHERN DISTRICT OF OHIO.

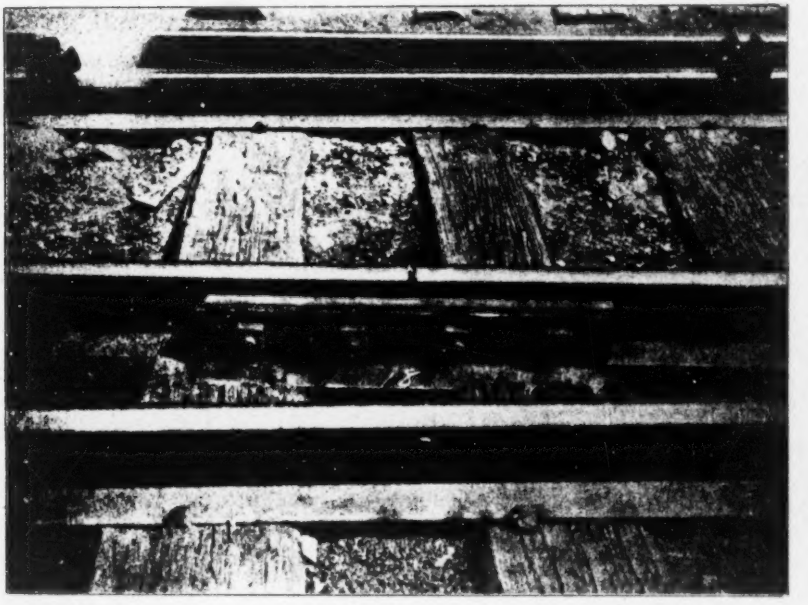
The Railroad Supply Co.
vs.
The Elyria Iron and Steel Company

No. 7,088

"Complainant's Exhibit No. 172, Rusk Inspection Photograph, Boston & Maine Railroad, Lynn Station, Massachusetts."

2/28/1911.

Notary Public.



1393 *Stipulation.*

It is further stipulated and admitted, by and between counsel, that if E. H. Bell, Vice-President of the complainant corporation, was called as a witness, duly sworn and examined, he would testify to the following statements, and that this stipulation be received in evidence, subject to the understated objections of defendant's counsel, with the same force and effect as though adduced by the deposition of said Bell taken in the usual manner, said statements being as follows, to-wit:

1. That during the year 1909, The Railroad Supply Company has sold 44,691,172 tie-plates of which 39,210,595 were corrugated top plates and 5,480,577 were other than corrugated top plates.

2. That out of the total number of tie-plates having a corrugated top, to-wit: 184,019,783, shown on "Complainant's Exhibit No. 57, Complainant's Sales Chart" corrected to show all tie-plates and marked "Complainant's Exhibit No. 173, Complainant's Sales Chart Corrected to Include 1909 Sales, G. R. Wilkins, Notary Public," sold by The Railroad Supply Company to and including the year 1909, there was included all corrugated top tie-plates known as the Harriman type, sold to the so-called Harriman lines, or Railways, to the total number of 37,617,612 Harriman type tie-plates; and that the said sales of the said Harriman type of tie-plate constituted approximately 20.44 per cent of the total sales of corrugated top tie-plates by The Railroad Supply Company.

3. That from 1899 to September 6, 1907, The Railroad Supply Company sold and delivered to The Chicago and Alton Railroad, 430,609 tie-plates, divided as to types as follows:

1394 Wolhaupter (like Complainant's Ex. No. 24)	121,671
Corrugated Top Shoulder and Flat Bottom (like Complainant's Exhibit No. 12)	229,438
Q & W	59,500
Servis	20,000
Total	430,609

4. That from March, 1899, to 1907, inclusive, The Railroad Supply Company sold and delivered to The Chicago, Indianapolis and Louisville Railroad (sometimes called The Monon), 60,000 flat top shoulder tie-plates, and 304,150 Wolhaupter tie-plates (like Complainant's Exhibit No. 24, some with and some without a top shoulder) or a total of 364,150 tie-plates.

5. That during the years 1899 to 1909, inclusive, The Railroad Supply Company sold and delivered to the Illinois Central Railroad tie-plates, divided as to types of plates, as follows:

Servis	71,810
Q & W	217,767
Wolhaupter (like Complainant's Exhibit No. 24)	1,019,951
Or a total of	1,309,528

tie-plates; and that in September, 1910, also sold to said Illinois Central Railroad, 300,000 corrugated top shoulder, flat bottom tie-plates, like Complainant's Exhibit No. 12.

Mr. Reed: Defendant's counsel objects to the foregoing statements as irrelevant and immaterial, and also as not proper rebuttal evidence.

(Here follows diagram marked pages 1395 and 1396.)

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF ILLINOIS.

---oo0oo---

THE RAILROAD SUPPLY CO.,
vs.) No.
THE HART STEEL COMPANY) 29,294
and GUILFORD S. WOOD)

IN THE UNITED STATES CIRCUIT COURT
FOR THE EASTERN DIVISION OF THE
NORTHERN DISTRICT OF OHIO.

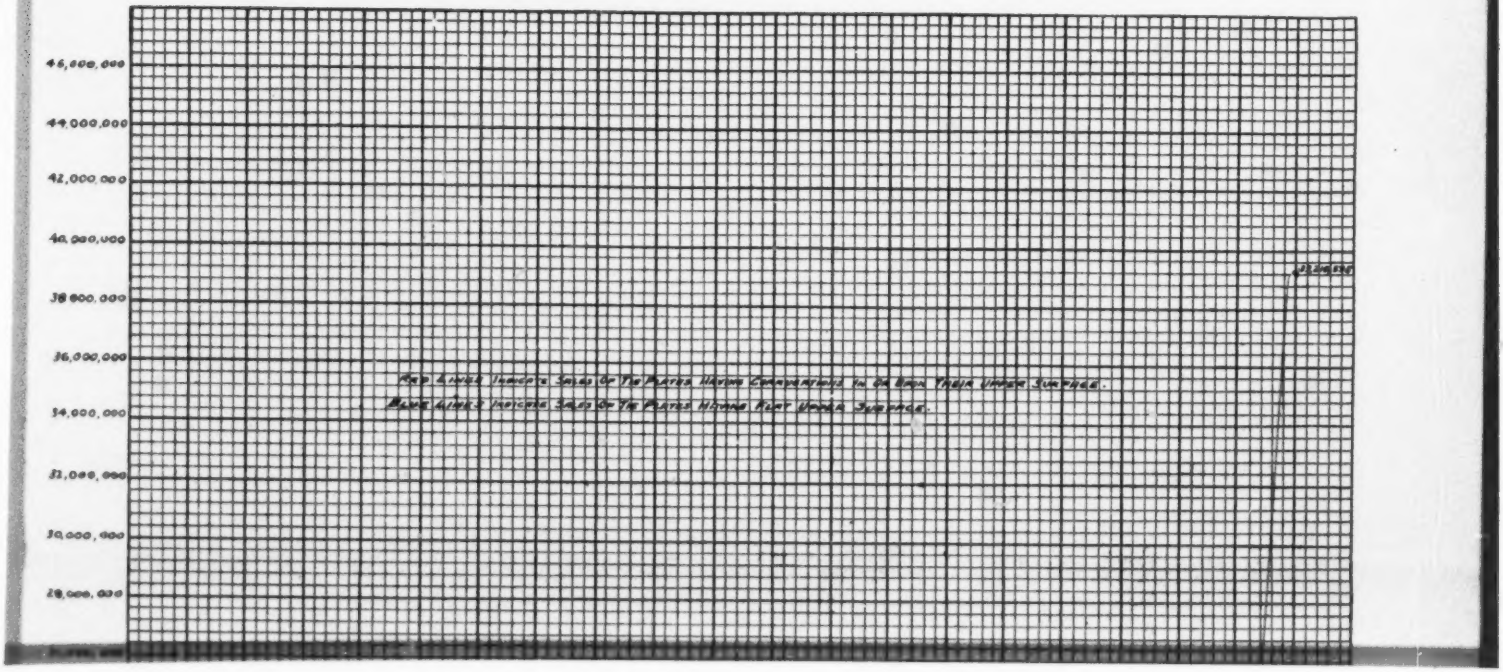
---oo0oo---

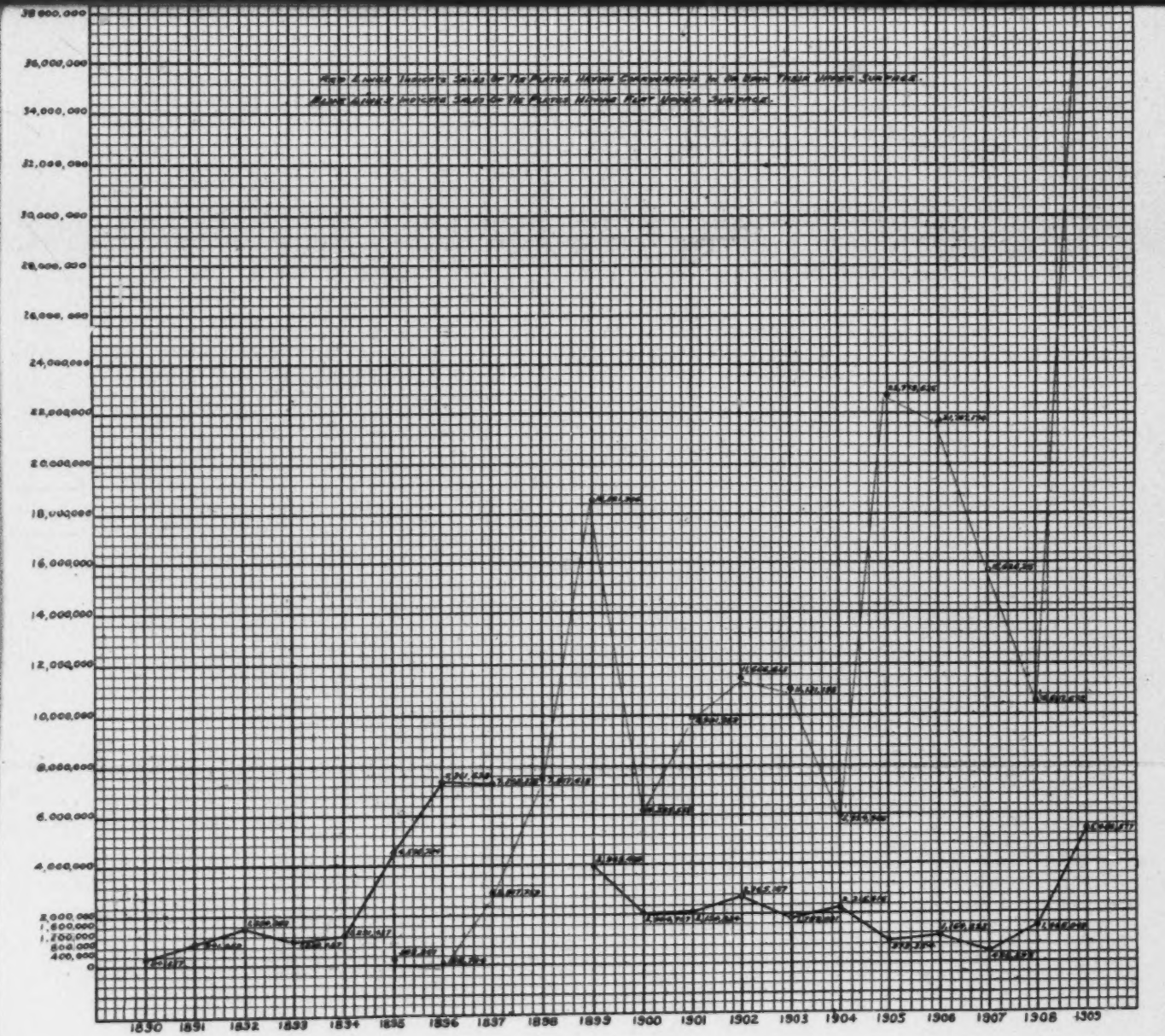
THE RAILROAD SUPPLY CO.,
vs.) No.
The Elyria Iron and) 7,668.
Steel Company)

"Complainant's Sales Chart Corrected to Include 1900 Sales".

2/28/1911.

Notary Public.

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Mr. Brown: Complainant's counsel here introduces in evidence as an exhibit a copy of the Complainant's Exhibit No. 57,
1397 Complainant's Sales Chart, having the two sales indicating lines extended to include the column marked 1909 and bearing the two sets of figures at the ends of said lines, 39,210,595 at the upper or red line to indicate that number of corrugated tie-plates sold by the complainant during the year 1909, and the 5,480,577 at the end of the lower line to indicate the number of plates other than corrugated top plates sold by the complainant during the year 1909, and the same is marked "Complainant's Exhibit No. 173, Complainant's Sales Chart Corrected to Include 1909 Sales, G. R. Wilkins, Notary Public 2/28/1911."

Mr. Reed: The offer and the exhibit offered in evidence are objected to as irrelevant and immaterial and as not proper rebuttal evidence.

Col. Brown: Complainant's counsel produces and offers in evidence as an exhibit a Shopright License Agreement between the complainant, The Railroad Supply Company and the Union Pacific Railroad Company and others known as "The Harriman Lines," executed by Henry S. Hawley, President, on behalf of the complainant, and by W. V. S. Thorne, Director of Purchases, as attorney-in-fact of said Harriman Lines, made and entered into on the 11th day of June, 1908, the same to be marked "Complainant's Exhibit No. 174 Harriman Shopright License Under Wolhaupter Patent No. 721,644, G. R. Wilkins, Notary Public, 2/28/1911."

Mr. Reed: The offer and the Exhibit are objected to as irrelevant and immaterial and not proper rebuttal evidence.

1398 *Stipulation.*

It is stipulated by and between counsel that if Henry S. Hawley was recalled and duly sworn as a witness he would identify the Instrument just offered in evidence, and would testify that it has been in full force and effect since the date of its execution and delivery, June 11, 1908; that it has not been cancelled nor modified and that it is in full force and effect on this 28th day of February, 1911; and it is further stipulated and agreed that said statements be received in evidence as the deposition of said Hawley for all purposes of this case with the same force and effect as though said Hawley had been called, examined and cross-examined as a witness.

Mr. Reed: The deposition of said Henry S. Hawley is objected to as irrelevant, incompetent and immaterial and as not proper rebuttal evidence.

In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

No. 29294.

RAILROAD SUPPLY CO.
vs.
HART STEEL CO. and GUILFORD S. WOOD.

In the United States Circuit Court for the Eastern Division of the Northern District of Ohio.

No. 7668.

RAILROAD SUPPLY CO.
vs.
ELYRIA IRON AND STEEL COMPANY.

"Complainant's Exhibit No. 174. Harriman Shopright License under Wolhaupter Patent No. 721,644."
2/28/1911.

G. R. WILKINS,
Notary Public.

1399 Shopright License Agreement.

This agreement made and entered into this 11th day of June, 1908, by and between The Railroad Supply Company, a corporation organized and existing under the laws of the State of Illinois, having its principal place of business at Chicago, in said state, hereinafter termed "Supply Company," and the Union Pacific Railroad Company, Oregon Short Line Railroad Company, Oregon Railroad and Navigation Company, Southern Pacific Company, The Northwestern Pacific Railroad Company, or any lines or companies now or hereafter owned or controlled by, or associated or affiliated with the said companies, hereinafter termed "Railway Lines."

Witnesseth, that,

Whereas, the said Supply Company is the owner of various United States Letters Patent for Tie-Plates, including patent No. 721,644, issued February 24, 1903, to Benjamin Wolhaupter; and

Whereas, the Railroad Supply Company, has by letter of even date herewith to Mr. W. V. S. Thorne, Director of Purchases of the Railway Lines, proposed to furnish said Railway Lines, in accordance with their requirements, tie-plates of the form or pattern illustrated in drawings marked C. S. 23 A., dated December, 1904, and C. S. 37, dated April, 1905, and in such drawings as revised as to title and information September, 1905; and

Whereas, the Railway Lines have heretofore manufactured tie-plates claimed to be covered by the claims of said Letters Patent No. 721,644, at a mill located at Laramie, Wyoming; and

Whereas, the said Railway Lines desire to acquire a shopright license under said Letters Patent No. 721,644, and under any other patents now or hereafter owned or controlled by said Supply Company relating to tie-plates of the form shown in the drawings or any of them above referred to, whether such patents relate to the tie-plates themselves or to their manufacture or use, said license to give the said Railway Lines the privilege of manufacturing for their use and of using rolled steel flat bottom tie-plates as shown in the said above mentioned drawings.

Now, therefore, the parties hereto have agreed as follows:

1400 1. In consideration of the acceptance of the said proposal of even date herewith, and One Dollar ($1) and other valuable consideration in hand paid by the Railway Lines to the Supply Company, the receipt of which by the Supply Company is hereby acknowledged, the Supply Company hereby grants unto the Railway Lines, and each of them, the license and privilege of manufacturing at their own shops or mills and for their own use rolled steel flat bottom tie-plates of the forms or patterns illustrated in the said above mentioned drawings or either of them, during the existence in force of the said contract embodied in said proposal of even date herewith for furnishing tie-plates, Provided that nothing herein contained shall give to the said Railway Lines any right or privilege of manufacturing tie-plates except in or at mills or shops directly owned by said Railway Lines or either of them, or owned by a corporation a majority of the capital stock of which is owned by the said Railway Lines or either of them, nor shall give to the said Railway Lines any right or privilege of manufacturing railway tie-plates for sale to, or for the use of, any person, firm or corporation whatsoever, other than Railway Lines herein provided for.

2. It is understood and agreed that the said Railway Lines, or either of them, shall have the right to manufacture rolled steel flat bottom tie-plates under the license granted by the preceding paragraph subject to the terms and conditions herein expressed, without restriction by or claim under said Letters Patent No. 721,644, or any other letters patent now or hereafter owned or controlled by the said Supply Company, and that the license hereby granted shall become null and void upon the termination or cancellation under the provisions thereof of said contract embodied in said proposal of even date herewith for furnishing tie-plates.

3. The said Supply Company further licenses the Railway Lines and each of them, to use wherever desired the tie-plates manufactured during the life of this contract in accordance with the provisions of paragraph No. 1 herein, free from any present or future claim of any sort whatsoever, on behalf of the Supply Company under any patent now or hereafter owned or controlled by it, it being the intention of this agreement to forever license and set free

1401 tie-plates so made by the Railway Lines or either of them during the time this license agreement is in existence for use by said Railway Lines or either of them.

4. It is understood and agreed that the license herein granted is

to be without the payment of any further royalty or license fee by the Railway Lines, or either of them, to the Supply Company.

5. And for the consideration aforesaid the said Supply Company hereby releases the said Railway Lines, and each of them, from all claims and demands whatsoever for damages, profits, license fees, or costs which it has or may have against the said Railway Lines, or either of them, by reason of the manufacture and use by the said Railway Lines of tie-plates like those shown in any of the drawings above referred to, or described or claimed in the said Wolhaupter Patent No. 721,644, which have been made for the sole use of said Railway Lines or either of them, prior to the date of this license agreement, at the mill located at Laramie, Wyoming, or at any other mill or shop directly owned by said Railway Lines, or either of them, or at any mill or shop owned by any corporation a majority of the capital stock of which is owned by said Railway Lines, or either of them.

6. It is understood and agreed that the Railway Lines hereby admit and acknowledge the validity of Letters Patent No. 721,644, the ownership thereof by the Supply Company, and the exclusive rights of the Supply Company to make, use and sell tie-plates covered by said patent, during the period to which the said contract embodied in said proposal of even date herewith for furnishing tie-plates shall continue in force and effect, and not longer. And the said Railway Lines hereby agree that they will not directly or indirectly contest the validity of said Letters Patent, the ownership thereof by the Supply Company, or the exclusive rights of the Supply Company to make, use and sell tie-plates covered by said Letters Patent during the period in which said contract embodied in said proposal of even date herewith shall remain in force and effect and no longer. It is further expressly understood and agreed that the acceptance of the license hereby granted, and the manufacture or use of tie-plates thereunder, shall not operate as an estoppel on the Railway Lines, or either of them, after the expiration or the ter-
1402 mination of said contract embodied in said proposal of even date herewith, to contest the validity of said Letters Patent the ownership thereof by the Supply Company, or the exclusive rights of said Supply Company to make, use and sell tie-plates covered by said Letters Patent, and shall not after the expiration or termination of said contract embodied in said proposal of even date herewith prevent the Railway Lines, or either of them, from taking advantage of any decision of any court of competent jurisdiction destroying the validity of said Letters Patent, or denying the ownership thereof by the Supply Company, or affecting the rights of the said Supply Company thereunder; or prevent after the expiration or termination of said contract embodied in said proposal of even date herewith the Railway Lines from in any way, or at any time, or in any manner, questioning such validity, ownership or rights, with the same force and effect as if this license had not been made. It is also understood and agreed that this license gives no rights to the Railway Lines during the existence of said contract embodied in said proposal of even date herewith other than such as are specifically con-

ferred hereby, and that after the termination of said contract embodied in said proposal of even date herewith the parties hereto shall be restored as to all subsequent acts of any of said parties, to the positions which they would respectively have occupied had this license agreement not been made, the Supply Company being at liberty to proceed as it may desire against the Railway Lines, or either of them, for anything done after the expiration of said contract embodied in said proposal of even date herewith, and the Railway Lines, or either of them, being at liberty after the expiration of said contract embodied in said proposal of even date herewith to avail themselves of all defenses which they desire to make, anything in this contract to the contrary notwithstanding.

In witness whereof, the parties hereto have signed these presents, the said Railway Supply Company by the hand of its President, attested by the signature of its Secretary, and its corporate seal, and each of the Railway Lines by the signature of W. V. S. Thorne, as attorney-in-fact of the several corporations constituting said Railway Lines.

THE RAILROAD SUPPLY CO.,
By HENRY S. HAWLEY.

1403 Attest:
PAUL W. KOHMEN,
Secretary. (CORPORATE SEAL.)

W. V. S. THORNE,
As Attorney in Fact of the Several Corporations Constituting said Railway Lines.

Witnesses:
GAYTON A. DOUGLASS.
SIDNEY WILLIAMS.

Col. Brown: Complainant's counsel also offers in evidence as an exhibit to illustrate one process of rolling tie-plates, a copy of Letters Patent of the United States No. 938,109, granted to E. H. Bell, October 26, 1909, and the same is marked "Complainant's Exhibit No. 175, Bell Process Patent, G. R. Wilkins, Notary Public, 2/28/1911." (See back of book for patent.)

Mr. Reed: The Bell patent Exhibit is objected to as incompetent, irrelevant and immaterial and as improper rebuttal evidence.

And thereupon on the 28th day of February, 1911, an adjournment was taken subject to notice.

G. R. WILKINS,
Notary Public.

1404 UNITED STATES OF AMERICA,
State of Illinois, County of Cook, ss:

I, G. R. Wilkins, a notary public, in and for the County of Cook and State of Illinois, do hereby certify that the foregoing stipulations re testimony of J. E. Bennky, and Franz Reinhold; stipulation re tie-plates sold Santa Fe System by complainant; deposition of

Willard A. Smith; stipulation re testimony of Hiram M. Buck; stipulation as to number of tie-plates sold by complainant to various railroads as shown by "Complainant's Exhibit No. 173, Complainant's Sales Chart Corrected to Include 1909 Sales," and stipulation re testimony of Henry S. Hawley in regard to Harriman Shopright License, were taken before me pursuant to agreement of counsel, at the offices of Messrs. Poole & Brown, 808 Marquette Building, beginning on Wednesday, February 8th, 1911, at 10 o'clock a. m. and continuing until and including February 28, 1911, as therein appears; that the said stipulations and depositions were taken on the part of the complainant to be used on the hearing of a certain cause now pending in the Circuit Court of the United States for the Eastern Division of the Northern District of Illinois, in Chancery, No. 29,294, wherein the Railroad Supply Company is the complainant and The Hart Steel Company and Guilford S. Wood, the defendants, that the parties to said cause were present at the taking of the same, complainant by its counsel, Col. Taylor E. Brown, and defendants by their counsel, Frank F. Reed, Esq., as therein appears; that before deposing the said Willard A. Smith was by me duly cautioned and sworn to testify to the truth, the whole truth and nothing but the truth in the cause aforesaid; and that said stipulations and depositions were reduced to writing on the typewriting machine by me from statements of counsel and of said Willard A. Smith, and the deposition of said Smith was duly subscribed to by the said witness in the presence of counsel and before me.

And I do further certify that I am neither attorney nor of counsel for any of the parties to the above entitled cause, nor related by blood or marriage to either of said parties or to said counsel, and am nowise interested in the result of said cause.

1405 I further certify that my fees as notary public, and for typewriting, amounting to $26.10, have been paid by the complainant.

I do further certify that the foregoing is a true record of the proceedings had before me, pursuant to agreement of counsel as aforesaid, between the dates mentioned.

In witness whereof, I have hereto set my hand and affixed by notarial seal, this 28th day of February, A. D. 1911.

G. R. WILKINS,
Notary Public.

1406 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

In Chancery. No. 29294.

THE RAILROAD SUPPLY COMPANY, Complainant,
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD, Defendants.

Notice.

Frank F. Reed, Esq., Counsel for Defendant, Peoples Gas Building, Chicago, Illinois.

DEAR SIR: You will please take notice that unless I have in writing by 12 o'clock noon of Friday, April 28, 1911, such additional objections or statements as you may desire to make on the complainant's record in the above entitled cause, I shall request the notary to close the proofs, attach his certificate, and file the complainant's rebuttal record.

This notice applies to the proceedings taken on February 28, 1911, copy of which was furnished you same day.

In this connection I desire to call your attention to the following facts. In January I talked with you about making certain stipulations relating to the Netherlands Railway and to the Santa Fe purchases.

1407 January 30, 1911, I furnished you with a copy of the proposed record containing the stipulations in form and notified you that the complainant was tabulating the information you had verbally requested relating to the Santa Fe purchases.

February 2, 1911, I sent you information concerning the statement of facts I desired to have included in the proposed stipulations in addition to the facts covered by record furnished January 30, 1911. This you acknowledged on February 3, 1911, indicating your willingness to accede to my requests.

You finally asked me to draft up the proposed stipulations anew, which I did on February 8, 1911, and furnished you a copy.

February 9, 1911, I had a brief conference with you in your office during which you said that you would agree to the stipulations and would attend the examination of the witness Smith the next day.

February 10, 1911, the witness Willard Smith was examined, and was cross-examined by you in my office, and in the presence of the notary, Mr. Hawley and myself you agreed to the stipulations provided I would insert the word "substantially" in the one relating to the admission of Santa Fe purchases of tie-plates, which I agreed to do and have since done.

February 24th and also on February 25, 1911, I talked with you concerning other stipulations I desired you to enter into in order to avoid the further taking of proofs, and upon your finally acceding

to my requests I opened the record on February 28, 1911, and spread the same thereon, together with your formal objections and furnished you with copy of same.

March 4, 1911, I wrote you a letter transmitting a second copy of same, requesting you to notify me at once whether you desired to spread upon the record any further objections. You put
1408 me off from time to time, however, as you had previously done in regard to the Santa Fe purchases, agreeing on March 16, 1911, to give me a final answer on Monday, March 20, 1911, saying you would spend Saturday afternoon the 18th and Sunday the 19th at your office checking up and preparing an amendment to your answer which you desired to file.

Monday, March 20, 1911, you informed me that you would agree to all my stipulations excepting the one relating to the Harriman License regarding which you would have to see some railroad man before you could give me a definite answer and you asked me to furnish you with a list of all the witnesses for both sides and a list of exhibits, stating that your files of the case were all mixed up and you could not check up anything without it.

March 21, 1911, I furnished the data you requested.

March 27, 1911, I again talked with you and you said you would give me a reply as to the Harriman License stipulation the next day.

March 28, 1911, you wrote that the gentleman (Mr. Isaacs), whom you had to see about the License was out of the city and that you could not see him until your return from New York on the following Sunday.

March 30, 1911, you informed me that it would not be necessary for me to call Mr. Hawley or other witnesses to prove up the Harriman License as you would admit it, but was too busy to come over and spread your objections upon the record that day. I left the city that day for Mt. Clemens to take the baths for rheumatism and you had a respite until Monday, April 17, 1911, when you agreed definitely to meet me at my office on Monday, April 24, 1911, and settle the matter.

Monday, April 24, 1911, you were in New York.

Tuesday, April 25, 1911, you made an appointment with my office to see me this, Wednesday, afternoon.

1409 This morning, April 26, 1911, while on my way to my office I met you on the street, and not knowing of the appointment you made yesterday and which you did not mention to me, I endeavored to get you to again make a definite appointment for the purpose of spreading upon the record any objections you desired to make, telling you that it would not take you a half hour to read over the record for that purpose. You replied that you had not been able to put in the half hour.

Since this matter has now been pending over two months, I cannot prejudice my client's interests by acceding to your dilatory tactics any further and hence I repeat the foregoing notice that I shall file my record on Friday, April 28, 1911, at 12:05 noon unless before

12 o'clock noon of that day I have in writing such further objections as you may desire to have entered upon complainant's record.

Respectfully,

TAYLOR E. BROWN,
Solicitor for Complainant.

Chicago, Illinois, April 26, 1911.

Service of the foregoing notice together with copy of same is hereby acknowledged at Chicago, Illinois, this 26th day of April, 1911, before 5 p. m.

F. F. REED,
Solicitor for Defendant.

1410 CHICAGO, Friday, April 28, 1911.

Met pursuant to notice.

Present: Col. Taylor E. Brown, on behalf of complainant; Frank F. Reed, Esq., on behalf of defendant.

The foregoing stipulations were slightly amended, typewritten pages 63 and 64 of the record rewritten accordingly and substituted for the original typewritten pages 63 and 64 and as such approved.

And thereupon counsel for complainant notified defendant's counsel that complainant's proofs in rebuttal are closed.

This closed the proceedings before me.

G. R. WILKINS,
Notary Public.

UNITED STATES OF AMERICA,
State of Illinois, County of Cook, ss:

I, G. R. Wilkins, a notary public, in and for the County and State aforesaid, do hereby certify that the foregoing proceedings under date of April 28th, 1911, were had before me on said date on behalf of the complainant herein, The Railroad Supply Company, and I further certify that the same is a true record of the proceedings so had before me, pursuant to notice on the date mentioned.

In witness whereof, I have hereto set my hand and affixed my notarial seal, this 28th day of April, A. D. 1911.

G. R. WILKINS,
Notary Public.

1411 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

No. 29294.

THE RAILROAD SUPPLY COMPANY
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD.

"Complainant's Exhibit No. 5, Wolhaupter Assignment." June 9, 1909.

G. R. WILKINS,
Notary Public.

2—391.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To All Persons to Whom These Presents Shall Come, Greeting:

This is to certify, That the annexed is a true copy from the records of this office of an instrument of writing executed by Benjamin Wolhaupter, July 25, 1898, and Recorded February 16, 1900, in Liber T-60, page 323. Said record has been carefully compared with the original and is a correct transcript of the whole thereof.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the
[SEAL.] 1412 City of Washington this 5th day of November, in the year of our Lord one thousand nine hundred and eight and of the Independence of the United States of America the one hundred and thirty-third.

C. C. BILLINGS,
Assistant Commissioner of Patents.

Liber T-60.
Page 323.

In consideration of one dollar and other valuable considerations to me in hand paid by David S. Wegg, of Chicago, Illinois, the receipt of which is hereby acknowledged and confessed, I do hereby sell, assign and set over unto the said David S. Wegg, his heirs, and assigns, all of my right, title and interest in and to the following United States Patents:

		Dated.
Wolhaupter Cattle Guard for Railways	No. 447,394	Mar. 3, 1891
" Cattle Guard.....	500,730	July 4, 1893
" " "	505,867	Oct. 3, 1893
" " "	505,866	" " "
Gardner Ry. Surface Stock Gd. Reissue	11,338	May 16, 1893
Gardner Ry. Surface Stock Gd. Reissue.	472,574	Apl. 12, 1892
Wolhaupter Surface Cattle Guard.....	516,256	Mar. 13, 1894

Wolhaupter Railway Tie Plate.....	530,738	Dec. 11, 1894
" Tie Plate.....	538,808	May 7, 1895
" " "	538,809	" " "
Chamberlin " "	538,817	" " "
Wolhaupter " "	542,787	July 16, 1895
Wolhaupter Surface Cattle Guard.....	553,882	Feb. 4, 1896

1413

Wolhaupter Railway Tie Plates.....	579,509	Mch. 23, 1897
" " " "	584,617	June 15, 1897
Dunham Ry. Tie Plate.....	469,386	Feb. 23, 1892

Also all my right, title and interest in and to the following United States Applications for Letters Patent filed by me:

		Filed.
Method of Laying Ry. Tie plates	Serial No. 553,523	June 21, 1895
Railway Tie Plate.....	609,878	Oct. 24, 1896
Unlocking Lever for Car Coupler	641,329	June 18, 1897
Cattle Guard	417,275	Jan. 7, 1892
Tie Plate.....	634,890	May 3, 1897

Also all my right, title and interest in and to the following foreign Letters Patent:

Canadian patent on Cattle Guard	No. 40008	Dated Aug. 24, 1892.
Canadian patent on Tie Plate..	No. 52143	Dated May 6, 1896.
Mexican patent on Tie plate....	No. 849	Dated Apr. 28, 1896.

The said entire, right, title and interest in each and every one of the above applications and patents to be held and enjoyed by the said David S. Wegg, his heirs and assigns as fully and entirely as the same would have been held by me had this assignment, sale and transfer not been made.

Witness my hand and seal at Chicago, Illinois, this 25th day of July, 1898.

BENJAMIN WOLHAUPTER.

Witnesses:
W. H. CHAMBERLIN.
GERTRUDE HEIDELBERGER.

1414 STATE OF ILLINOIS,
County of Cook, ss:

Before me a Notary Public in and for said State and County, personally appeared Benjamin Wolhaupter who acknowledged that he executed the above assignment and that the same was his free and voluntary act.

Given under my hand and seal this 25th day of July, 1898.

GERTRUDE HEIDELBERGER,
Notary Public.

GERTRUDE HEIDELBERGER,
Notary Public, Cook Co., Ill.

G. H. S.
7/25/98.
10 Cents.

Recorded Feb. 16, 1900.

1415 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

No. 29294.

THE RAILROAD SUPPLY COMPANY
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD.

"Complainant's Exhibit No. 6, Wegg Assignments. Wolhaupter Patents."
June 9, 1909.

G. R. WILKINS,
Notary Public.

2—391.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To All Persons to Whom These Presents Shall Come, Greeting:

This is to certify, That the annexed is a true copy from the records of this office of an instrument of writing executed by D. S. Wegg, December 30, 1898, and Recorded February 8, 1899, in Liber Q. 59, page 71. Said record has been carefully compared with the original and is a correct transcript of the whole thereof.

In testimony whereof, I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City
[SEAL.] of Washington, this 5th day of November, in
1416 the year of our Lord one thousand nine hundred and eight and of the Independence of the United States of America the one hundred and thirty-third.

C. C. BILLINGS,
Assistant Commissioner of Patents.

Liber Q. 59.
Page 71.

In Consideration of the sum of five thousand dollars to me in hand paid by the Q. & W. Company, a corporation of the State of Illinois, the receipt of which is hereby acknowledged and confessed, and of a certain license this day issued to The Railroad Supply Company, I do hereby sell, assign and set over unto the said Q. & W. Company, its successors and assigns, all of my right, title and interest in and to the following United States patents for railway tie plates:

Wolhaupter	Railway	Tie	Plate	 530,738	Dec. 11, 1894
"	"	"	"	 538,808	May 7, 1895
"	"	"	"	 538,809	"
Chamberlin	"	"	"	 538,817	"
Wolhaupter	"	"	"	 542,787	July 16, 1895
"	"	"	"	 597,509	Mar. 23, 1897
"	"	"	"	 584,617	June 15, 1897
Dunham	"	"	"	 469,386	Feb. 23, 1892

Also all my right, title and interest in and to the following United States applications for letters patents:

Method of laying railway tie plates, serial number 553,523, filed June 21, 1895.

Railway Tie Plate		609,878	Oct. 24, 1896
"	"	634,890	May 3, 1897

The said entire right, title and interest in each and every one of the above applications and patents to be held and enjoyed by the said Q. & W. Company, its successors and assigns,
1417 & 1418 as fully and entirely as the same would have been held by me had this assignment not been made.

I do further covenant and agree to fully acquire by purchase within a year from the date hereof, all title and interest that Benjamin Wolhaupter now has in the aforesaid patents and applications for patents, and when so acquired to sell, assign and convey the same to the Q. & W. Company by further covenants or otherwise; for the full performance of which I do hereby bind myself, my heirs, executors, administrators and assigns.

Witness my hand and seal this 30th day of December, 1898.

D. S. WEGG. [SEAL.]

Witnesses:
MICHAEL F. SULLIVAN.

STATE OF ILLINOIS,
County of Cook, ss:

Before me a notary public in and for said state and county, personally appeared D. S. Wegg, who acknowledged that he executed the above assignment, and that the same was his free and voluntary act.

Given under my hand and seal this 30th day of December, 1898.

M. F. SULLIVAN.

M. F. SULLIVAN,
Notary Public, Cook County, Illinois.

10 Ten Cents 10. W. B. N. 2/8/99. I. R. Stamp.

Recorded Feb. 8, 1899.

1419 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

No. 29294.

THE RAILROAD SUPPLY COMPANY
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD.

"Complainant's Exhibit No. 7, Q & W Assignment Wolhaupter Patent No. 538,809."
June 9th, 1909.
[SEAL.]

G. R. WILKINS,
Notary Public.

2–391.

DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of an instrument of writing.

Recorded October 22, 1908, in Liber F-80, page 164.

Said record has been carefully compared with the original and is a correct transcript of the whole thereof.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of Washington, this 10th day of May, in the year of our Lord one thousand nine
1420 hundred and nine and of the Independence of the United States of America the one hundred and thirty-third.

[SEAL.] E. B. MOORE,
Commissioner of Patents.

Liber F-80, Page 164.

Assignment.

Whereas, Q & W Company, a corporation organized under and existing by virtue of the laws of the State of Illinois, and having its principal place of business at Chicago, in the County of Cook, and State of Illinois, is the owner of United States Letters Patent No. 538,809, granted May 7, 1895, to Benjamin Wolhaupter for improvements in Tie Plates; and

Whereas, The Railroad Supply Company, a corporation organized under and existing by virtue of the laws of the State of Illinois, and having its office and principal place of business at Chicago, in the County of Cook and State of Illinois, desires to acquire the entire interest in said invention and in the Letters Patent obtained therefor:

Now, therefore, to all whom it may concern, be it known that for and in consideration of the sum of One Dollar ($1.00) and of other valuable consideration in hand paid to the said Q & W Company by the said The Railroad Supply Company, the receipt of which is hereby acknowledged, the said Q & W Company has sold, assigned and set over, and by these presents does sell, assign and set over unto the said The Railroad Supply Company, the entire right, title and interest in and to the invention, as set forth in said Letters Patent, and in and to the said Letters Patent, the same to be held and enjoyed by the said The Railroad Supply Company, for its own use and behoof and for the use and behoof of its successors, as-
1421 signs and legal representatives, to the full end of the term for which said Letters Patent are granted, as fully and entirely as the same would have been held and enjoyed by the said Q & W Company if this assignment and sale had not been made.

And for the consideration aforesaid the Q & W Company has sold, assigned and set over, and does hereby sell, assign and set over

unto the said assignee, its successors, assigns and legal representatives all rights of action and claims for damages, profits and costs, and all other demands for any sum or sums of money whatsoever which it has or may have, either at law or in equity, against all persons, firms or corporations by reason of any unlawful use of said invention, or of any infringement upon the rights and privileges secured and intended to be secured by said Letters Patent, and it does hereby irrevocably appoint and constitute any officer of the assignee, its successors, assigns and legal representatives its attorneys to demand, bring suit for, collect and receive all such claims for damages, profits and costs, and all and every such sum or sums of money whatsoever, and to have, use and take all lawful means and proceedings in its name, or otherwise, for the recovery thereof, and to compound, compromise, discharge and release any and all such claims and demands, and upon payment of the same to give suitable acquittances under seal, or otherwise, and to do all lawful acts and things whatsoever concerning the premises, as fully as it might and could do.

In witness whereof, the Q & W Company hereunto sets its hand and affixes its seal, this 9th day of October A. D. 1908.

[The Q & W Company Corporate Seal, Chicago, Ills.]

Q & W COMPANY,
By HENRY S. HAWLEY, *President.*

Attest:
W. H. DAYTON, *Secretary.*

1422 STATE OF ILLINOIS,
County of Cook, ss:

I, E. H. Bell, a notary public, in and for the County and State aforesaid, do hereby certify, that Henry S. Hawley, personally known to me to be the same person whose name is subscribed to the foregoing Instrument, and personally known to me to be the President of the Q & W Company, appeared before me this day in person and acknowledged that he signed, sealed and delivered the said Instrument as President of the Q & W Company, for the uses and purposes therein set forth.

Given under my hand and notarial seal, this 9th day of October, A. D. 1908.

[Seal E. H. Bell, Notary Public, Cook County, Ills.]

E. H. BELL,
Notary Public.

1423 & 1424 STATE OF NEW YORK,
County of New York, ss:

I, Otto Kempner, a notary public, in and for the County and State aforesaid, do hereby certify, that W. H. Dayton, personally known to me to be the same person whose name is subscribed to the foregoing Instrument, and personally known to me to be the Secretary of the Q & W Company, appeared before me this day in person and acknowledged that he signed, sealed and delivered the said Instru-

ment as Secretary of the Q & W Company, for the uses and purposes therein set forth.

Given under my hand and notarial seal, this 17th day of October, A. D. 1908.

[Seal Otto Kempner, Notary Public, New York County, A. D. 1908.]

OTTO KEMPNER,
Notary Public, New York County.

Recorded October 22, 1908.

1425 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

No. 29294.

THE RAILROAD SUPPLY COMPANY
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD.

"Complainant's Exhibit No. 8, Face of File Wrapper, Wolhaupter Patent 691,332."

G. R. WILKINS,
Notary Public.

June 9, 1909.

2—390.

UNITED STATES OF AMERICA,
DEPARTMENT OF THE INTERIOR,
UNITED STATES PATENT OFFICE.

To All to Whom These Presents Shall Come, Greeting:

This is to certify that the annexed is a true copy from the Records of this Office of the Face of the File Wrapper in the matter of the

Letters Patent of
Benjamin Wolhaupter,
Number 691,332, Granted January 14, 1902,
for
Improvement in Railway-Tie Plates.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of Washing-
1426 ton this 5th day of May, in the year of our Lord one thousand nine hundred and nine and of the Independence of the United States of America the one hundred and thirty-third.

[SEAL.]

C. C. BILLINGS,
Assistant Commissioner of Patents.

Div. 34. "F" Div.
(Serial Number) 1897. (Ex'r's Book,)
634890. Forfeited. 27

395

Renewal
Patent No. 691,332.
Benjamin Wolhaupter,

Of Chicago.
County of ——.
State of Illinois.
Invention, Railway Tie-Plate.
Parts of application filed:

Petition .....May 3, 1897.
" .....Nov. 9, 1901.
Affidavit ..... " " "
Specification ..... " " "
Drawing ..... " " "
Model not req'd.
Specimen.
First fee Cash $15 .....May 3, 1897.
" " " $15.....Nov. 9, 1901.
" " Cert.
App. filed complete.....May 3, 1897.
Re " " " .....Nov. 9, 1901.

1427 Examined Mar. 16, 1900.

G. R. SIMPSON.

Countersigned.

J. W. BABSON,
For Commissioner.

Notice of allowance .....March 28, 1901.
Nov. 20, 1901.
Final fee Cash.....—— —, 189–.
" " Cert. .....—— —, 189–.
1902.
Patented .....Jan. 14, [189–].*

L. S. Bacon
Asso.

W. H. Chamberl[a]*in,
Bedford B'ld'g,
[1527 Monadnock Blk.,]*
City Chicago, Ills.

[* Words and figures enclosed in brackets erased in copy.]

Div. 34.

Renewal.

Division of App. No. —. Filed —— —, 190–.

(Number Series of 1900.) Div. 34.

(Ex'r's Book) 67

[634,890]* 81,780 1901..... 966

Patent No. 691,332.
Name, Benjamin Wolhaupter.
Of Chicago.
County of ——.
State of Illinois.
Invention, Railway Tie Plate.
Parts of Application filed:

Original.		Renewed.
Petition, ...May 3, 1897,	[190–]*	Nov. 9, 1901
Affidavit ..... " " "	[190–]*	—— —, 190–
Specification... " " "	[190–]*	—— —, 190–
1428		
Drawing ..... " " "	[190–]*	—— —, 190–
Model of Specimen not req'd.	[190–]*	—— —, 190–
First Fee Cash $15.		
May 3, 1897.	[190–]*	$15. Nov. 9, 1901
" " Cert..... —— —,	190–.	—— —, 190–
App. filed complete, May 3 1897. 190–		Nov. 9, 1901
Examined Mar. 26, 1900.		
G. R. Simpson	190–	G. R. Simpson, Nov. 18, 1901
Countersigned, J. W. Babson, for Commissioner.		J. W. Babson, —— —, 190– For Commissioner.
Notice of Allowance .....March 28, 1900		Nov. 20, 1901
Final Fee Cash .....—— —,	190–	$20. Dec. 23, 1901
" " Cert.....—— —,	190–	

Patented, January 14, 1902.
Associate Attorney, L. S. Bacon.
City Attorney, W. H. Chamberlin, Bedford B'ld'g, Chicago, Ill.
Serial Number, ——.
Name, ——.
Date of Patent, ——.
Patent No. 81,780.

1429 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

No. 29294.

THE RAILROAD SUPPLY COMPANY
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD.

"Complainant's Exhibit No. 4, Charter and Articles of Incorporation Railroad Supply Company."
June 9th, 1909.

G. R. WILKINS,
Notary Public.

STATE OF ILLINOIS,
Department of State:

James A. Rose, Secretary of State.

To all to whom these presents shall come, Greeting:

I, James A. Rose, Secretary of State of the State of Illinois, do hereby certify that the following and hereto attached is a true copy of Articles of Incorporation of The Railroad Supply Company the original of which is now on file and a matter of record in this office.

In testimony whereof, I hereto set my hand and cause to be affixed the great Seal of State.

Done at City of Springfield this 14th day of May A. D. 1909.

[SEAL.] JAMES A. ROSE,
Secretary of State.

1430 STATE OF ILLINOIS,
Cook County, ss:

To William H. Hinrichsen, Secretary of State:

We, the undersigned, William Elijah Duncombe, William Nelson Wegg and David Spencer Wegg all of the City of Chicago in the State of Illinois propose to form a corporation under an Act of the General Assembly of the State of Illinois, entitled, "An Act Concerning Corporations," approved April 18, 1872, and all acts amendatory thereof; and, for the purpose of such organization we hereby state as follows, to wit:

1. The name of such corporation is "The Railroad Supply Company."

2. The object for which it is formed is the manufacture, purchase and sale of railroad supplies and any and all mechanical devices used in any commercial industry; the procuring of patent rights from the United States Government or any other Government upon any such devices; the acquiring and disposing of rights to manufacture, vend and use such devices in any way under patents or otherwise and the carrying on of any business enterprise connected with the same.

3. The capital stock shall be One Thousand Dollars ($1,000).

4. The amount of each share is Ten Dollars ($10.00).

5. The number of shares One Hundred.

6. The location of the principal office is in The City of Chicago County of Cook, State of Illinois.

7. The duration of the corporation shall be Ninety nine (99) years.

WILLIAM ELIJAH DUNCOMBE.
WILLIAM NELSON WEGG.
DAVID SPENCER WEGG.

1431 STATE OF ILLINOIS,
County of Cook, ss:

I, Kemper K. Knapp, a notary public in and for the County and State aforesaid, do hereby certify that on the 28th day of February, A. D. 1895, personally appeared before me William Elijah Duncombe, William Nelson Wegg and David Spencer Wegg, to me personally known to be the same persons who executed the foregoing statement, and severally acknowledged that they executed the same for the purposes therein set forth.

In witness whereof, I have hereunto set my hand and seal the day and year above written.

[SEAL.] KEMPER K. KNAPP,
Notary Public.

Filed Mar. 6, 1895. W. H. Hinrichsen, Secretary of State.

STATE OF ILLINOIS,
Department of State:

William H. Hinrichsen, Secretary of State.

To all to whom these presents shall come, Greeting:

Whereas, it being proposed by the persons hereinafter named to form a corporation under an Act of the General Assembly of the State of Illinois, entitled "An Act Concerning Corporations," approved April 18, 1872, in force July 1, 1872, and the amendments thereto, the object and purposes of which corporation are set forth in a statement duly signed and acknowledged according to law, and this day filed in the office of the Secretary of State.

1432 Now, therefore, I, William H. Hinrichsen, Secretary of State of the State of Illinois, by virtue of the power vested in and the duties imposed upon me by law, do hereby authorize, empower, and license William Elijah Duncombe, William Nelson Wegg and David Spencer Wegg the persons whose names are signed to the before mentioned statement, as Commissioners to open books for subscription to the Capital Stock of said "The Railroad Supply Company," such being the name of the proposed corporation, as contained in the statement, at such times and places as the said Commissioners may determine.

In testimony whereof, I hereunto set my hand and cause to be affixed the Great Seal of State. Done at City of Springfield, this 6th day of March, A. D. 1895, and of the Independence of the United States the one hundred and 19th.

[SEAL.] W. H. HINRICHSEN,
Secretary of State.

To William H. Hinrichsen, Secretary of State of the State of Illinois:

The Commissioners, duly authorized to open Books of Subscription to the Capital Stock of The Railroad Supply Company, pursuant to license heretofore issued, bearing date the 6th day of March A. D. 1895, do hereby report that they opened books of Subscription to the Capital Stock of said Company, and that the said Stock was fully subscribed; that the following is a true copy of such subscription, viz:

We, the undersigned, hereby severally subscribe for the number of shares set opposite our respective names, to the Capitol Stock of The Railroad Supply Company and we severally agree to pay the said Company for each share, the sum of Ten Dollars.

1433 Name.	Shares.	Amount.
William E. Duncombe	1	$10
William N. Wegg	1	10
David S. Wegg	98	980
	100	$1,000

That on the 18th day of March A. D. 1895, at the 1115 Ashland Block, Chicago, Illinois, at the hour of 10 o'clock a. m., they convened a meeting of the subscribers aforesaid pursuant to notice required by law, which said notice was deposited in the postoffice, properly addressed to each subscriber, ten days before the time fixed therein, a copy of which said notice is as follows, to wit:

To William E. Duncombe, William N. Wegg & David S. Wegg:

You are hereby notified that the Capital Stock of The Railroad Supply Company has been fully subscribed, and that a meeting of the subscribers of such stock will be held at Room 1115 Ashland Block in the City of Chicago, on the 18th day of March, A. D. 1895, at 10 o'clock, a. m., for the purpose of electing a Board of Directors for said Company and for the transaction of such other business as may be deemed necessary.

Signed WILLIAM ELIJAH DUNCOMBE,
WILLIAM NELSON WEGG,
DAVID SPENCER WEGG,
Commissioners.

That said subscribers met at the time and place in said notice specified, and proceeded to elect Directors and that the following persons were duly elected for the term of 1 year, viz:

William E. Duncombe.
William N. Wegg.
David S. Wegg.

WILLIAM ELIJAH DUNCOMBE,
WILLIAM NELSON WEGG,
DAVID SPENCER WEGG,
Commissioners.

1434 STATE OF ILLINOIS,
County of Cook, ss:

On this 18th day of March, A. D. 1895, personally appeared before me, a Notary Public, in and for said County, in said State, William Elijah Duncombe, William Nelson Wegg and David Spencer Wegg and made oath that the foregoing report by them subscribed is true in substance and in fact.

KEMPER K. KNAPP, *Notary Public.*

Filed Mar. 19, 1895. W. H. Hinrichsen, Sec'y of State.

STATE OF ILLINOIS,
Department of State:

William H. Hinrichsen, Secretary of State.

To all to whom these presents shall come, Greeting:

Whereas, a Statement, duly signed and acknowledged, has been filed in the office of the Secretary of State, on the 6th day of March, A. D. 1895, for the organization of the "The Railroad Supply Company" under and in accordance with the provisions of "An Act Concerning Corporations," approved April 18, 1872, and in force July 1, 1872, and all acts amendatory thereof, a copy of which statement is hereto attached;

And whereas, a License having been issued to William Elijah Duncombe, William Nelson Wegg and David Spencer Wegg, as Commissioners to open books for subscription to the Capital Stock of said Company;

1435 & 1436 And whereas, the said Commissioners have, on the 19th day of March A. D. 1895, filed in the office of the Secretary of State a report of their proceedings under the said License, a copy of which report is hereunto attached;

Now, therefore, I, William H. Hinrichsen, Secretary of State of the State of Illinois, by virtue of the powers vested in me by law, do hereby certify that the said The Railroad Supply Company is a legally organized Corporation under the laws of this State.

In testimony whereof, I hereunto set my hand and cause to be affixed the Great Seal of State. Done at the City of Springfield, this 19th day of March, A. D. 1895, and of the Independence of the United States the one hundred and 19th.

[SEAL.] W. H. HINRICHSEN,
Secretary of State.

1437 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

No. 29294.

THE RAILROAD SUPPLY COMPANY
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD.

"Complainant's Exhibit No. 9, Q. & W Assignment, Wolhaupter Patent No. 691,332."

June 9th, 1909.

[SEAL.] G. R. WILKINS, *Notary Public.*

2—391.

Department of the Interior.

United States Patent Office.

To all to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of an instrument of writing

Recorded October 29, 1908, in Liber G-80, page 101.

Said record has been carefully compared with the original and is a correct transcript of the whole thereof.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of Washington, this 10th day of May, in the year of our Lord one thousand
1438 nine hundred and nine and of the Independence of the United States of America the one hundred and thirty-third.

[SEAL.] E. B. MOORE,
Commissioner of Patents.

Liber G 80, Page 101.

Assignment.

Whereas, Q. & W. Company, a corporation organized under and existing by virtue of the laws of the State of Illinois and having its office and principal place of business at Chicago, in the County of Cook, and State of Illinois, is the owner of United States Letters Patent Number 691,332, granted January 14th, 1902, to Benjamin Wolhaupter for Improvements in Tie Plates; and

Whereas, The Railroad Supply Company, a corporation organized under and existing by virtue of the laws of the State of Illinois and having its office and principal place of business at Chicago, in the County of Cook, and State of Illinois, desires to acquire the entire interest in said invention and in the Letters Patent obtained therefor;

Now, therefore, to all whom it may concern, be it known that for and in consideration of the sum of One Dollar ($1.00) and of other valuable consideration to it in hand paid by the said The Railroad Supply Company, the receipt of which is hereby acknowledged, the said Q. & W. Company has sold, assigned and set over, and by these presents does sell, assign and set over unto the said The Railroad Supply Company, the entire right, title and interest in and to the said invention, as set forth in said Letters Patent, and in and to the said Letters Patent, the same to be held and enjoyed by the
1439 said The Railroad Supply Company, for its own use and behoof and for the use and behoof of its successors, assigns and legal representatives, to the full end of the term for which said Letters Patent are or may be granted, as fully and entirely as the same would have been held and enjoyed by the Q. & W. Company if this assignment and sale had not been made.

And for the consideration aforesaid, the Q. & W. Company has sold, assigned and set over, and does hereby sell, assign and set over unto the said The Railroad Supply Company, its successors, assigns and legal representatives, all rights of actions and claims for damages, profits and costs, and all other demands for any sum or sums

of money whatsoever which the Q. & W. Company has or may have, either at law or in equity against all persons, firms or corporations by reason of any unlawful use of said invention, or of any infringement upon the rights and privileges secured and intended to be secured by said Letters Patent, and the Q. & W. Company does hereby irrevocably appoint and constitute any officer of the said The Railroad Supply Company, its sucessors, assigns and legal representatives, as its attorney to demand, bring suit for, collect, and receive all such claims for damages, profits and costs, and all and every such sum or sums of money whatsoever, and to have, use and take all lawful means and proceedings in the name of the Q. & W. Company, or otherwise, for the recovery thereof, and to compound, compromise, discharge and release any and all such claims and demands, and upon payment of the same to give suitable acquittances under seal, or otherwise, and to do all lawful acts and things whatsoever concerning the premises, as fully as the Q. & W. Company might and could do.

1440 In witness whereof, the Q. & W. Company has hereunto set its hand and affixed its seal, this 22d day of October A. D. 1908.

[The Q. & W. Company Corporate Seal, Chicago, Ills.]

Q. & W. COMPANY,
By HENRY S. HAWLEY,
President.

Attest: W. H. DAYTON, *Secretary.*

STATE OF ILLINOIS,
County of Cook, ss:

I, C. H. Bell, a notary public, in and for the said County, in the State aforesaid, do hereby certify, that Henry S. Hawley, personally known to me to be the same person whose name is subscribed to the foregoing Instrument, and personally known to me to be the President of the Q. & W. Company, appeared before me this day in person, and acknowledged that he signed, sealed and delivered the said Instrument as President of the Q. & W. Company for the uses and purposes therein set forth.

Given under my hand and seal, this 22d day of October A. D. 1908.

[Seal E. H. Bell, Notary Public, Cook County, Ills.]

E. H. BELL,
Notary Public.

1441 & 1442 STATE OF NEW YORK,
County of New York, ss:

I, Otto Kempner, a notary public, in and for the said County in the State aforesaid, do hereby certify, that W. H. Dayton, personally known to me to be the same person whose name is subscribed to the foregoing Instrument, and personally known to me to be the Secretary of the Q. & W. Company, appeared before me this day in person, and acknowledged that he signed, sealed and delivered the said Instrument as Secretary of the Q. & W. Company, for the uses and purposes therein set forth.

Given under my hand and seal, this 24th day of October A. D. 1908.

[Seal Otto Kempner, Notary Public, New York County.]

OTTO KEMPNER,
Notary Public, Kings County.

Certf. filed in N. Y. Co.

Recorded October 29, 1908.

1443 In the United States Circuit Court for the Eastern Division of the Northern District of Illinois.

No. 29294.

THE RAILROAD SUPPLY COMPANY
vs.
THE HART STEEL COMPANY and GUILFORD S. WOOD.

"Complainant's Exhibit No. 10, Wolhaupter Assignment Patent No. 721,544."

June 9th, 1909.

[SEAL.] G. R. WILKINS,
Notary Public.

2—391.

Department of the Interior.

United States Patent Office.

To all persons to whom these presents shall come, Greeting:

This is to certify that the annexed is a true copy from the records of this office of an instrument of writing executed by Benjamin Wolhaupter, November 10, 1908, and Recorded November 27, 1908, in Liber F-80 page 358.

Said record has been carefully compared with the original and is a correct transcript of the whole thereof.

In testimony whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed at the City of
1444 Washington, this 10th day of May, in the year of our Lord one thousand nine hundred and nine and of the Independence of the United States of America the one hundred and thirty-third.

[SEAL.] E. B. MOORE,
Commissioner of Patents.

Liber F-80, Page 358.

Assignment.

Whereas, I, Benjamin Wolhaupter, a resident of New York City, in the County of New York and State of New York, have invented certain new and useful improvements in Tie-Plates, as set forth in Letters Patent of the United States, No. 721,644, granted on the 24th day of February 1903; and

Whereas, The Railroad Supply Company, a corporation organized under and existing by virtue of the laws of the State of Illinois, and having its office and principal place of business at Chicago, in

the County of Cook, and State of Illinois, desires to acquire the entire interest in said invention and in the Letters Patent obtained therefor:

Now, therefore, to all whom it may concern, be it known that for and in consideration of the sum of One Dollar ($1.00) and of other valuable consideration to me in hand paid by the said The Railroad Supply Company, the receipt of which is hereby acknowledged, I, the said Benjamin Wolhaupter, have sold, assigned and set over, and by these presents do sell, assign and set over unto the said The Railroad Supply Company, the entire right, title and interest in and to the said invention, as set forth in said Letters Patent, and in and to the said Letters Patent, the same to be held and enjoyed by
1445 the said The Railroad Supply Company, for its own use and behoof and for the use and behoof of its successors, assigns and legal representatives, to the full end of the term for which said Letters Patent are or may be granted, as fully and entirely as the same would have been held and enjoyed by me if this assignment and sale had not been made.

And for the consideration aforesaid, I have sold, assigned and set over, and do hereby sell, assign and set over unto the said assignee, its successors, assigns and legal representatives, all rights of action and claims for damages, profits and costs, and all other demands for any sum or sums of money whatsoever which I have or may have, either at law or in equity, against all persons, firms or corporations by reason of any unlawful use of said invention, or of any infringement upon the rights and privileges secured and intended to be secured by said Letters Patent.

I, for myself, my heirs and assigns, covenant to and with said assignee, its successors and assigns, that I have the lawful right to assign said invention and Letters Patent in manner and form as herein expressed, and that the interest hereby conveyed is free from all prior assignment, grant, mortgage, license or other incumbrance whatsoever.

In witness whereof, I hereunto set my hand, and affix my seal, this 10th day of November A. D. 1908.

BENJAMIN WOLHAUPTER. [SEAL.]

1446 STATE OF NEW YORK,
County of New York, ss:

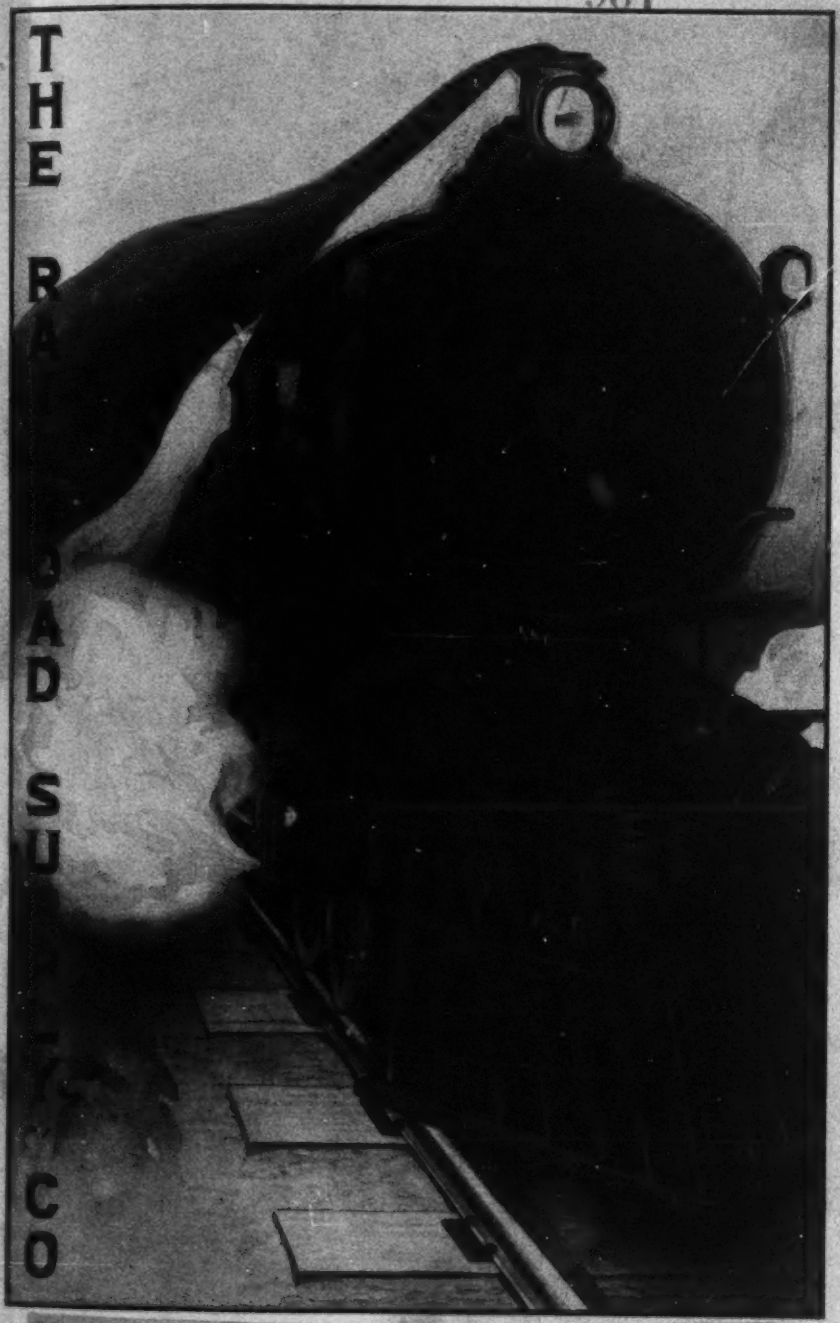
I, Harold W. Chapman, a notary public, in and for the County, in the State aforesaid, do hereby certify, that Benjamin Wolhaupter, personally known to me to be the same person whose name is subscribed to the foregoing Instrument, appeared before me this day in person and acknowledged that he signed, sealed and delivered the said Instrument his free and voluntary act, for the uses and purposes therein set forth.

Given under my hand and seal, this 10th day of November A. D. 1908.

[Seal Harold W. Chapman, Notary Public.]

HAROLD W. CHAPMAN,
Notary Public.

Kings County Certificate filed in New York County.
Recorded November 27, 1908.



"Complainant's Exhibit No. 21, Complainant's Yellow Covered Catalogue."

902

903

Issued by the

Tie Plate and Track Department

of

The Railroad Supply Co.

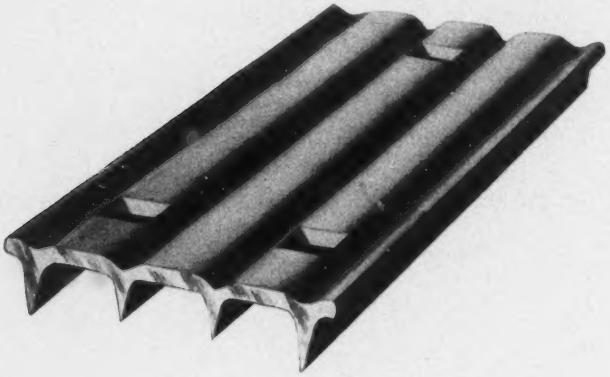
Bedford Building
Chicago . Illinois

The main factor in the destruction of ties is decay. The increase in traffic has modified track conditions and track requirements so that railroads prefer a hard tie to a soft one, for the reason that the hard tie will hold the spike better, keep the rail to gauge and resist the wearing action of the rail.

The growing scarcity of hard wood ties has brought about the use of soft wood ties, which have a longer life against decay. The soft wood ties, however, do not furnish sufficient resistance to the moving of the spike, nor to the wearing action of the rail, and it has been found necessary to use

IMPROVED

WOLHAUPTER



PATENTED

Rolled

4″, 4 1/4″, 5″ and 6″

Wide

3/16″, 1/4″, 5/16″ and 3/8″

Thick

Manufactured and Sold by
THE RAILROAD SUPPLY CO.

THEIR USES:

1. — To prolong the life of new soft wood ties by preventing the destruction of the fibres by the sawing action of the rail.

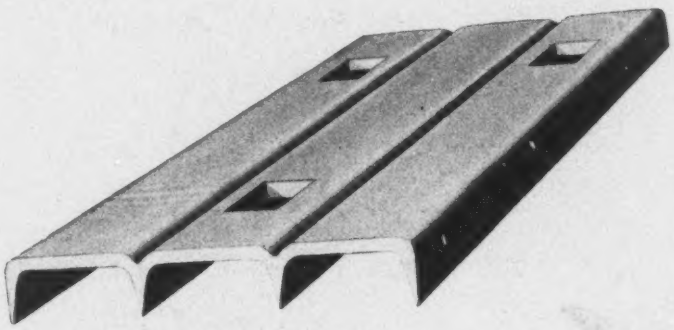
2. — To prolong the life for years of rail-eaten ties, by proper adzing and the use of tie plates.

3. — To give a firm seat to the rail, and hold it in an upright position, thereby maintaining perfect surface.

4. — To hold the track to gauge, for the reason that the spikes are backed by the plate on both sides of the rail, both spikes being used to hold rail in line.

THE

Q and W



PATENTED

Rolled

$4\frac{1}{4}$", 5" and 6"

Wide

$\frac{3}{16}$", $\frac{1}{4}$", $\frac{5}{16}$" and $\frac{3}{8}$"

Thick

Manufactured and Sold by
THE RAILROAD SUPPLY CO.

TIE PLATES

910

HISTORY

Many forms of tie plates have been introduced. The first plates used were flat pieces of boiler iron with holes punched for spikes.

The next was a flat bottom plate with a shoulder on top.

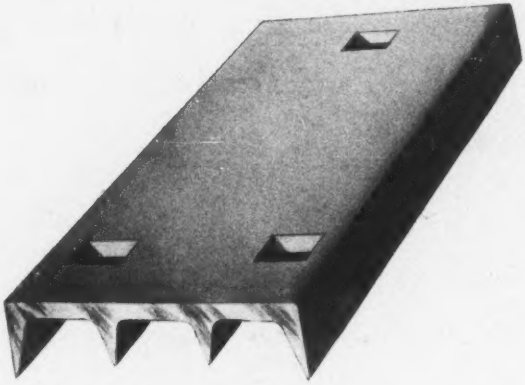
Plates were then made with under ridges cutting across the grain of the wood to prevent the sliding of the plate, and later modifications of this in the form of claws or broken ribs.

This style of plate was followed by the longitudinal flange plate.

911

The First Successful Longitudinal
Flange Tie Plate

THE SERVIS



PATENTED

Rolled

$4\frac{1}{4}$", 5" and 6"

Wide

$\frac{3}{16}$", $\frac{1}{4}$", $\frac{5}{16}$" and $\frac{3}{8}$"

Thick

Manufactured and Sold by
THE RAILROAD SUPPLY CO.

TIE PLATES

912

LONGITUDINAL FLANGES

Advantages

1st. A plate with longitudinal flanges is stronger for the weight of metal used than any other form of plate.

2nd. The flanges bedding themselves between the fibres of the wood, prevent the sliding of the plate.

3rd. They furnish the requisite supporting power to the spike to prevent the spreading of the track.

4th. Attach themselves to the tie in such a way as to become a part of it, preventing friction between the plate and tie, thus preserving the fibres of the tie.

The pioneer of longitudinal flange plates was the Servis. This was followed by the Wolhaupter, and next came the Q and W, a combination of the Servis and Wolhaupter.

SPECIAL FEATURES

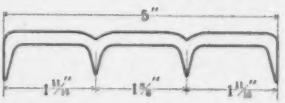
Wolhaupter and Q and W

STRENGTH

They furnish a maximum strength, maximum life, with a minimum amount of metal.

FLANGES

Designed to furnish the requisite resistance against buckling.



Q AND W

DISTRIBUTION OF METAL

So arranged as to give the greatest cross section of metal to resist the shearing action of the spike by having grooves over instead of between flanges; grooves between flanges drain water into spike holes.

GROOVES

Collect the sand and dirt and prevent the grinding out of the plate.

914

SPECIAL FEATURES

Wolhaupter and Q and W

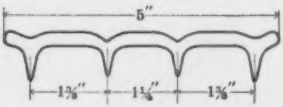
ARCH CONSTRUCTION

Produces great buckling strength, and when flanges are imbedded in tie, compresses the fibres, making the wood hard, resulting in a firm seat for the plate. Compression of fibres prevents decay and results in great adhesion to the tie.

BEARING SURFACE

Plates so constructed that rail bearing surface is practically of equal thickness throughout the plate.

WOLHAUPTER



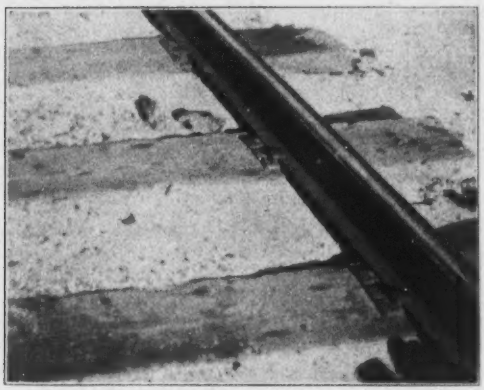
915

Q and W

Longitudinal Flange

TIE PLATES

In Actual Service



These plates have been in track four years

916

SPECIFICATIONS

WIDTH

Where Tie Plates are used on hard or medium hard, fibered ties, we suggest the use of a plate 4 1-4 or 5″ wide, in accordance with the weight of the rolling stock and amount of traffic.

On soft wood ties we suggest a plate not less than 5″ wide, preferably a plate 6″ wide.

THICKNESS

Under no circumstances should a plate less than 1-4″ thick be used. Where traffic is heavy, we suggest the use of a plate 5-16 or 3-8″ thick.

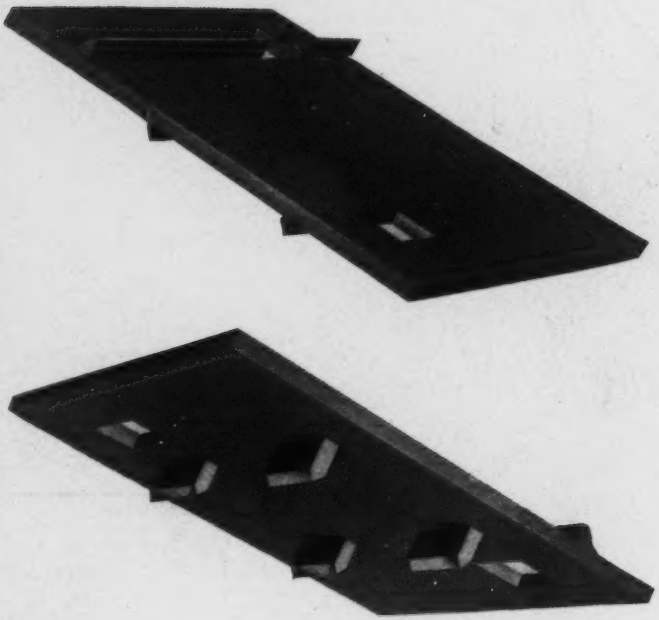
LENGTH

Plate to be not over 3″ longer than the width of the rail-base.

C. A. C.

Claw and Shoulder

TIE PLATE



PATENTED

Manufactured and Sold by
THE RAILROAD SUPPLY CO.

TIE PLATES

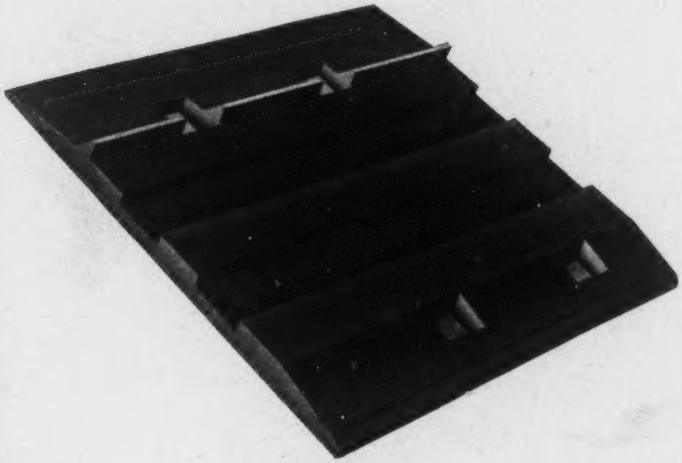
ECONOMY

From careful estimates it has been found that the saving in price from the purchase of soft wood ties over the price of hard wood ties, and the expense of adzing, tamping and keeping track to gauge and line, will pay the price of the plates in two years, where soft wood ties and tie plates are used in place of hard wood ties.

The above does not take into consideration the benefits derived from a smooth running track, the prevention of wrecks by track spreading, nor the increasing the life of the tie.

Flat Bottom

CORRUGATED TOP SHOULDER TIE PLATE



PATENTED

Rolled

5″, 6″, 7″ and 8″

Wide

$8\frac{1}{2}$″

Long

$\frac{3}{8}$″, $\frac{7}{16}$″ and $\frac{1}{2}$″

Thick

Manufactured and Sold by
THE RAILROAD SUPPLY CO.

922

We are Represented in all the Principal Cities in the United States

Chicago New York

Boston

St. Paul St. Louis

Denver

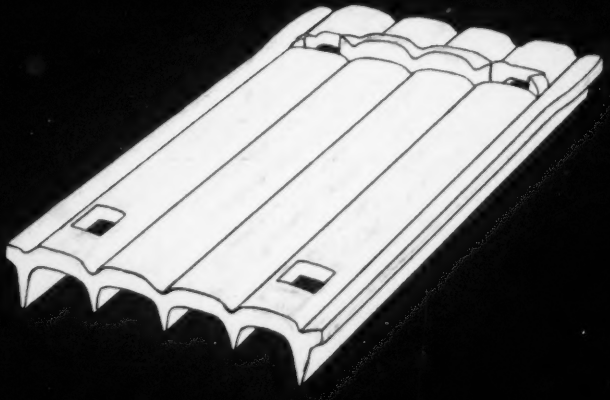
San Francisco Los Angeles

New Orleans

1470

923

WOLHAUPTER SHOULDER FLANGE TIE PLATES



THE RAILROAD SUPPLY CO.

BEDFORD BUILDING, CHICAGO, ILLINOIS.

COPYRIGHT 1907
BY
RAILROAD SUPPLY CO.

1473
925

The Railroad Supply Co.

BEDFORD BUILDING
CHICAGO, ILLINOIS

HENRY S. HAWLEY
PRESIDENT

E. H. BELL
VICE PRESIDENT

E. W. VOGEL
SIGNAL ENGINEER

J. A. COLBY
AUDITOR

Manufacturers of

Q and W—Wolhaupter—Servis
Flange Tie Plates

Wolhaupter Shoulder
Flange Tie Plates

Various Forms of Flat Tie Plates

Wolhaupter
Shoulder Flange
Tie Plates

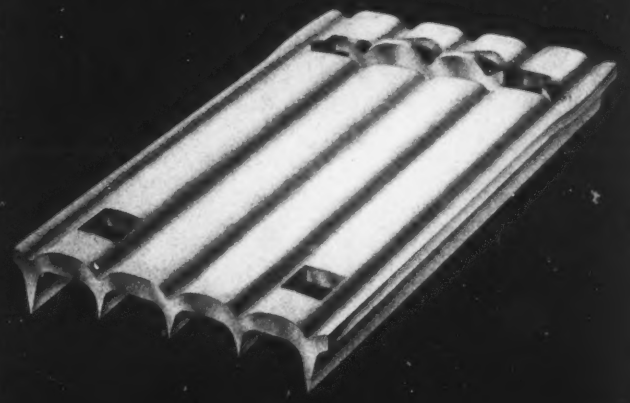
Are made in two widths and in three different styles of shoulders.

For curves and tangents where traffic is heavy we recommend the four shoulder, six inch wide plate, having two inside shoulders one-half an inch high, and outside shoulders five-sixteenths of an inch high, punched as shown.

With this plate the rail **cannot ride the shoulder—spreading of rail and throat cutting of spikes is absolutely prevented.**

WOLHAUPTER

Shoulder Flange Tie Plate



PATENTED

Shoulder one-half inch High

Rolled

5" and 6" Wide

$\frac{3}{8}$" Thick

Manufactured and Sold by
THE RAILROAD SUPPLY CO.

Wolhaupter Shoulder Flange Tie Plates

The five inch wide plate of this design is made in three styles of shoulders as illustrated, namely:

First: A plate with three five-sixteenths of an inch high shoulders, as illustrated on page No. 3, which can be punched either two holes right and left, three holes, or four holes, as desired.

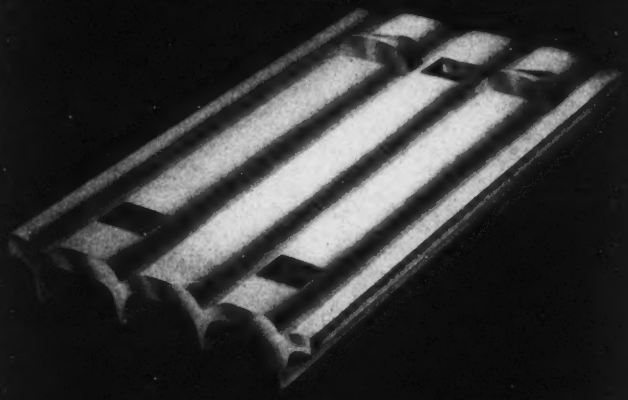
Second: A plate with a low shoulder designed to fit between the flange of the rail and the leg of the angle bar. This plate to be used where desired under joints.

Third: A plate with two shoulders, both being one-half an inch high, as illustrated on the following page. This plate can be used only with a three hole punching.

1479
931

WOLHAUPTER

Shoulder Flange Tie Plate



PATENTED

Two Shoulder Plate
Rolled

Shoulders $\frac{1}{2}$" High

5" Wide

$\frac{5}{16}$" and $\frac{3}{8}$" Thick

Manufactured and Sold by
THE RAILROAD SUPPLY CO.
CHICAGO

932

Compression Test

When a tie plate sinks into a tie below the bottom line of the plate, the tie is damaged by both the plate and the rail.

The Wolhaupter Flange Plate is designed to overcome this difficulty by compressing the fibres of the tie between the arch constructed under longitudinal flanges.

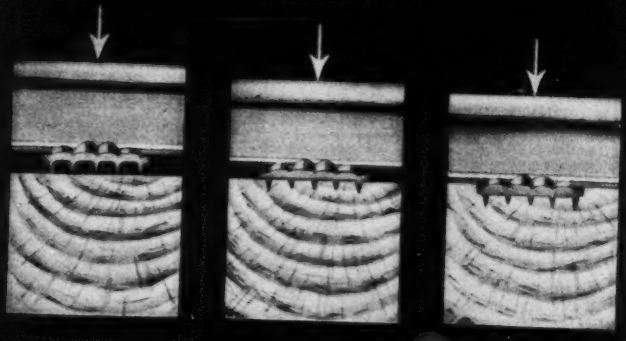
Tests made between a Wolhaupter flange plate and a flat bottom plate are illustrated on the following page.

It required **nine thousand one hundred pounds more** pressure to imbed the Wolhaupter than the flat plate.

Pressure applied sufficient to imbed plates so that their upper surface was in line with upper surface of tie, as shown.

933

TEST No. 1

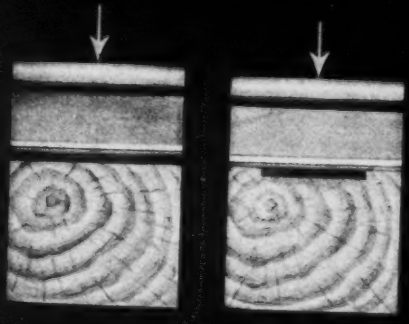


1A. Before application of load.

1B. Load required to imbed flanges to bottom line of plate, 43,160 lbs.

1C. Load required to imbed plate till top of plate is level with tie, 57,380 lbs.

TEST No. 2



2A. Before application of load.

2B. Load required to imbed plate till top of plate is level with tie, 48,280 lbs.

TIE PLATE TESTS

BY

Robert W. Hunt & Co.

FOR

The Railroad Supply Co.

JULY 26, 1907

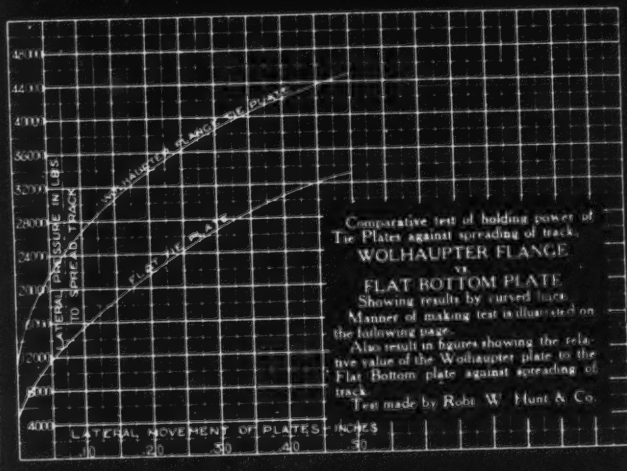
Comparative Imbedment Tests Wolhaupter and Flat Tie Plates.

934

Track Spreading

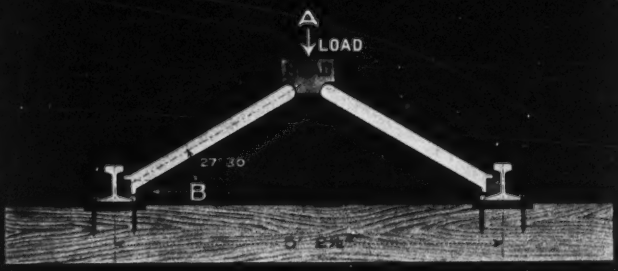
One of the principal functions of a tie plate is to prevent track spreading.

The Wolhaupter Shoulder Flange Tie Plate has from 36 to 100 per cent greater resistance against track spreading than a flat bottom plate, as demonstrated by the following test.



Track Spreading Test

Load applied at A; lateral thrust at B was then calculated, with results as shown below.



Lateral Thrust in Pounds to give Plates Lateral Movement		Lateral Movement of Plates in Inches	Relative Holding Power of Wolhaupter to Flat Plate
Wolhaupter Shoulder Flange Tie Plate	Flat Bottom Tie Plate		
18,000	9,000	.025	2.00 to 1
21,600	11,600	.050	1.86 to 1
24,500	13,600	.075	1.80 to 1
27,000	15,400	.100	1.75 to 1
30,800	18,700	.15	1.65 to 1
33,700	21,600	.20	1.56 to 1
36,300	24,300	.25	1.49 to 1
38,400	26,800	.30	1.43 to 1
40,400	28,800	.35	1.40 to 1
42,200	30,400	.40	1.38 to 1
43,700	31,900	.45	1.37 to 1
45,000	33,000	.50	1.36 to 1

1484
936

Buckling Strength

When tie plates buckle or bend in actual service, they fail in performing the functions for which they were intended.

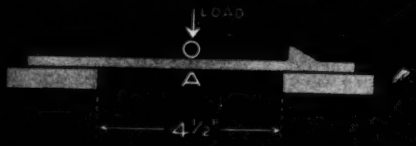
The superior strength of the Wolhaupter shoulder, longitudinal flange tie plate over other styles of plates is demonstrated in the tests shown on the following page.

Test made by R. W. Hunt & Co.

1485
937

Transverse Bending Tests

of various tie plates of same size *demonstrating* relative strength of designs.



Deflection at "A" Inches	Load in Pounds Sustained by Tie Plates Under the Deflections Indicated			
	Wolhaupter Flanged Plate	McKee Flanged Plate	Steel Plate Flat Bottom	Iron Plate Flat Bottom
0	0	0	0	0
0 25	5,800	3,400	1,800	3,000
0 5	9 800	5,600	3,800	6,200
0 75	11,500	7,400	5,600	7,800
.10	12,200	8,500	6,300	8,400
.15	13,300	9,900	8,000	8,900
.20	14,200	10,900	8,800	8,960
.25	15,000	11,800	9,400	8,960
.30	15,700	12,500	9,900	8,960
.35	16,300	13,200	10,300	8,960
.40	16,700	13,700	10,600	8,960
.45	17,200	14,200	10,900	8,960
.50	17,700	14,800	11,100	8,960
.55	18,100	15,200	11,200	8,960
.60	18,400	15,700	11,400	Broke

The Wolhaupter Shoulder Flange Tie Plate

Advantages

First: Stronger for weight of metal used than any other form of plate. See test, page No. 13.

Second: The half inch high shoulders absolutely prevent shearing of spikes and spreading of rails. See test, page No. 11.

Third: The flanges prevent motion between plate and tie and give maximum resistance against lateral thrust of rail. See test, page No. 11.

Fourth: When properly imbeded is less destructive to a tie than any other form of plate. See test, page No. 9.

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A Model Tie Plate

At a meeting of the Roadmasters and Maintenance of Way Association at Chicago in November, 1906, a committee on tie plates described a model tie plate as follows:

"*First:* Should be so constructed as to make itself a part and parcel of the tie; in other words, fasten itself to the tie with the least amount of detriment to the fibres of the wood."

"*Second:* Should be so constructed as to prevent spreading of track, assist the spikes and other work."

"*Third:* Should be so constructed as to give the greatest amount of buckling strength."

"*Fourth:* Should have flanges of sufficient length to give frictional resistance and sufficient body to prevent buckling."

The Wolhaupter Shoulder Flange Tie Plate fills all these requirements

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AND

TRACK SPECIALTIES

Highway Crossing Signals

Electric Block Signals

Highway Crossing Gates

Channel Pins

Bond Wires

Track Relays

Iron Covered Bells

Station Annunciators

Switch Indicators

Battery Chutes

Pan Bottom Coppers

Bumping Posts

Derailers

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